PACTRUST

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November 29, 2018

BY EMAIL – APanko@cityofsalem.net

Mayor Chuck Bennett and City Council
c/o Aaron Panko, Planning Division
City Hall, Room 305
555 Liberty Street SE
Salem, Oregon 97301

RE: KUEBLER GATEWAY SHOPPING CENTER SITE PLAN REVIEW APPLICATION

Dear Mayor Bennett and City Councilors:

For your reference and convenience, the following is a summary of key issues and events associated with the community shopping center that is the subject of the SPR Appeal being heard by City Council on Monday, December 10, 2018.

I. Significant Investment based upon Reliance of the 2007 City Council Decision

- To date, the applicant has spent $3,685,000 for the required offsite improvement work and has dedicated real property to the City with an estimated value of $80,000, for a total exaction cost of $3,765,000. These exactions/expenditures were required by the City under the 2007 City Council Decision in exchange for the applicants to use the subject property as a shopping center composed of up to 299,000 sq. ft. A shopping center close to 299,000 square feet was clearly contemplated by the city and parties because the city required the applicant to mitigate for the impacts of such a shopping center. Thus, it would not be accurate to say a smaller shopping center was contemplated.

- These expenditures are exclusively referable to a viable shopping center of the size proposed. With all due respect, the applicants strongly believe that they have vested their right to approval of the proposed shopping center subject only to the site review standards, which have nothing to do with tenant mixes, whether a shopping center should be allowed or the greater south Salem transportation system. Those issues were all thoroughly vetted and resolved in the adoption of the City Council's 2007 Decision. As the City's professional staff has made clear, the applicants' site plan meets all relevant standards and should be approved. Absent approval, the applicant's property has no economically viable use.

II. Summary of Planning and Development Approvals to Date

- December 13, 2007 - Comprehensive Plan/Zone Change Approval Order No. 2007-16-CPC/ZC (CPC/ZC 06-6) became final following affirmation by LUBA of City's approval. This decision was for the 18.4 acre site. The property is designated Commercial on the Comprehensive Plan Map and it is zoned Commercial Retail.

- The City Council's Final Decision was for a retail shopping center of a maximum gross leasable area (GLA) of 240,000 square feet on the 18.4 acre property. If developed in conjunction with the adjacent ten acres (as proposed), the total GLA of retail and office space is 299,000 square feet. (CPC/ZC 06-6 Condition 14).

- October 22, 2008 - Property Line Adjustments No. 08-19, 08-20 and 08-21 were approved by the City.

- October 27, 2009 - Zone Change 09-03 approval for the western 9.96-acres of the overall 28-acre property from a combination of RA and CO to CR. This decision also required all of the original conditions of approval from CPC/ZC 06-6 be completed prior to development of any portion of the western 9.96-acres, or the entire 28-acres.

- May 22, 2012 - Received Tree Removal Permit TRP 12-02 for the overall 28-acre property, which included trees around the former residences located on the property. The trees at the SW corner of the property were left in place based on coordination with the City pending final site plan for development of the property.

- June 11, 2012 - Received 1200-C permit No. 28333 from Oregon Department of Environmental Quality for original mass grading efforts on the property.

- June 18, 2012 - Oregon Department of State Lands Permit 49112-RF issued for fill of 0.36-acres low quality wetland.

- June 22, 2012 - Received City Grading permit 12-107398-GD for Mass grading on the property.

- September 7, 2012 - Type II Site Plan Review Approval SPR-UGA 12-11 received for development of Salem Clinic Building and Medical Office Building.

- November 7, 2012 - US Army Corps of Engineers permit NWP 2012-48 for fill of 0.36-acres low quality wetland and 420-foot intermittent drainage.

- February 8, 2013 - Executed Improvement Deferral Agreement with the City in accordance with SPR-UGA 12-11 that allowed development of the Salem Clinic and Medical Office building. Offsite improvements completed that were part of the conditions of approval on the property included the widening of Battle Creek and Boone Road CPC/ZC 06-6 and ZC 09-03.

- May 9, 2013 - Received City Grading Permit 13-106536-GD to complete mass grading onsite.

- March 21, 2014 - Subdivision approval SUB 14-01 was approved by the City.

- January 2, 2015 - Entered into improvement agreement with the City for Kuebler Boulevard widening from Commercial Street to I-5 interchange that was part of the original conditions of approval associated with CPC/ZC 06-6 and ZC 09-3. The agreement documents conditions of approval that are satisfied as part of a $3 Million early contribution toward the City's completion of the widening of the eastbound lanes of Kuebler Boulevard. In November, 2015, the Applicant funded $3 Million to the City of Salem, and the City completed the widening of Kuebler Boulevard in November, 2016.

- February 26, 2016 - Applicant received partial Satisfaction of original Conditions of Approval associated with CPC/ZC 06-6 and ZC 09-03 for contributions toward Kuebler Frontage Improvements and prior offsite improvements completed with the first phase of development for the Salem Clinic and Medical office building.

- June 30, 2016 - Kuebler Gateway Plat for the western portion of the shopping center was recorded in the Marion County Book of Plats Volume 47, Page 78.

III. Development Plan

- The proposed shopping center consists of a 168,550 square foot anchor retail store and approximately 21,000 square feet of retail shop space. Together with the 38,512 square feet of existing medical/office space on the adjacent ten acres, the total GLA is 228,062 square feet or approximately 24% less than what is approved for the property.

- The proposed shopping center consists of Costco with an associated fuel station as the anchor retailer and 4-retail shop buildings for multiple retail and service businesses. The adjacent medical/dental office building complex is also a part of the approved shopping center. A shared parking area will provide ample parking for use by patrons of all of the retail businesses as well as the existing medical/office tenants. All of the proposed retail and service uses are allowed in the CR zone.

IV. Tree Preservation

- The property includes eight Oregon white oak trees. As defined in SPC 808.005, these trees are defined as "Significant Trees", not "Heritage Trees". The removal of significant trees for construction of a commercial or industrial development is provided for in SRC 808.030(2):

  > (L) Removal of Oregon white oaks (Quercus garryana) where the removal is necessary in connection with construction of a commercial or industrial facility;

- Heritage trees may be designated as provided in SRC 808.010:

  > (a) Designation of heritage trees. The Council may, by resolution, designate a heritage tree upon nomination by the property owner, in recognition of the tree's location, size, or age; botanical interest; or historic or cultural significance.

- Removal of the eight Oregon white oak trees is necessary in order to develop a community shopping center of the size and scale approved in

CPC-ZC 06-6. Reference the proposed site plan as well as Exhibits A.1, A.2, A.3 and A.4 attached hereto, which are not proposed site plans but rather simply demonstrate the point that the removal of these trees is necessary because there is no shopping center of the size contemplated on the subject property that can avoid removal of the 8 oak trees. The proposed location and arrangement of the Costco building and supporting facilities is necessary to provide for the proper safe and efficient access, parking, and internal pedestrian and vehicle circulation. Also, the design and placement of Costco's building creates separation from vehicle parking, truck deliveries, trash service and circulation areas for the neighborhood to the south. To do otherwise would have the Costco building facing south exposing all parking lot activity, store lighting, signage, etc. towards the residential neighborhood.

V. Access and Circulation

- Driveways access to the shopping center is provided from Kuebler Blvd. (right-in only), Boone Road, and 27th Avenue. The Salem Area Transportation System Plan (STSP) classifies Kuebler Blvd as a Parkway (Major Arterial), and Boone Road and 27th Avenue are classified as Collectors. The shopping center also borders Battle Creek Road, a Minor Arterial, but no ingress/egress is proposed.

- None of the streets that provide ingress/egress to the shopping center or that border the shopping center are classified as a local residential street.

- All employee and patron parking is provided within the shopping center. No on-street parking is proposed.

VI. The Application is for a Shopping Center Previously Approved by City Council in 2007

- The City Council approved and limited the subject property to a shopping center of 299,000 sq. ft. The City's 2007 Decision imposes no limits on the size of any store or the tenant mix. Regardless, Costco was always one of the possible store mix types. Reference Exhibit B attached hereto, which was provided to SGNA in 2006 as possible stores for the shopping center.

- Costco is undeniably a retail store - SRC 400.045 - Retail Sales and Service:

  (b) Retail sales.

  (1) Characteristics. Retail sales is characterized by the sale, lease, or rental of products directly to final consumers, but may include the sale, lease, or rental of products to contractors. Visits by customers are generally not scheduled. Stores are typically open to the general public.

- Costco sells directly to consumers, customer visits are not scheduled, and the store is open to the general public.

- Costco's fueling station is contained within the shopping center. Gas stations are permitted outright in the CR zone, SRC 522.005 Table 522-1, and a gas station is commonly found as an integrated part of a retail shopping center, as at the Fred Meyer shopping center on Market Street, and at the Safeway store on South Commercial.

- Costco is not properly characterized as a wholesale or warehouse use. SRC 400.095 describes wholesaling as:

  > (a) General wholesaling.
  > (1) Characteristics. General wholesaling is characterized by sales of physical products primarily to customers other than the general public, including retailers, other wholesalers, and industrial, commercial, institutional, farm, or business users. The general public rarely comes to the site. Products are generally stored on-site, and may also be assembled, sorted, graded and/or re-packaged on-site. For establishments primarily engaged in sales to industrial, commercial, institutional, farm, or business users, activities on the site may also include on-site sales or order taking display areas. Products may be picked up on-site or delivered to the purchaser. General wholesaling takes place primarily within an enclosed building, and does not include the sale of dangerous, toxic, or potentially contaminating products.

- Costco sells to the general public, and the general public is the customer that comes to the site, the store is a retail sales use.

- Costco is not a storage and/or distribution facility for goods or personal property that are delivered to other firms or customers, it is not characterized as a wholesaling activity.

VII. Offsite Traffic Improvements – Reference Exhibit C

- Required offsite work completed since zone comp change:

  - Kuebler Blvd. – widening from a three-lane to a five-lane roadway from Commercial Street to I-5 with signal improvements and various dedicated right and left turn lanes at the Battle Creek Road and 27th Ave. intersections (funded by PacTrust).
  - Battle Creek Rd – roadway widening and full site frontage improvements between Kuebler Blvd. and Boone Rd (completed and funded by PacTrust).
  - Boone Rd – full site frontage improvements including new dedicated turn lanes adjacent to Salem Clinic Bldg. (completed and funded by PacTrust).
  - I-5/Kuebler Blvd. Interchange – addition of northbound on-ramp, reconstruction of the southbound ramps (completed in 2017 by ODOT).
  - PacTrust offsite transportation improvements completed to date – approx. $3,685K, plus $80,000 in real property dedicated to the city for the specific purpose of mitigating traffic impacts associated with a 299,000 sq. ft. shopping center.

- Required future offsite work planned in conjunction with the development of the community shopping center:

  - Battle Creek Rd/Boone Rd – installation of a new traffic signal, restriping the intersection to accommodate exclusive left turn lanes, and signage.

- Kuebler Blvd./Battle Creek Rd – modification of the existing traffic signal to accommodate dual northbound left-turn lanes, restriping on the north, south and east approaches of the intersection, and signing.
- Kuebler Blvd. /27th Avenue – modification of the existing traffic signal to accommodate dual westbound left-turn lanes and an exclusive northbound right-turn lane, restriping for these lanes, and signage.
- 27th Avenue – construction of an additional southbound through lane along a portion of the site frontage to accommodate a second westbound left-turn lane at the Kuebler Blvd. 27th Avenue intersection.
- Full access driveway (stop control) on Boone Rd. located approx. 375' to west of 27th Ave. aligned with Bow Ct.
- Full access driveway (single lane roundabout) on 27th Ave. located approximately 450' to the south of Kuebler Blvd.
- Boone Rd. – full site frontage improvements between 27th Ave. and the Salem Clinic Bldg.
- Budget for required future offsite transportation improvements – approx. $2.2 Million of construction costs and approximately an additional $300,000 of real property dedicated to the City

- Total Privately Funded Required Offsite Improvements and real property dedicated for the Kuebler Boulevard Right-Of-Way = $6.265 Million. This level of private investment can only pencil if the proposed shopping center is approved. There are no other viable options for the property.

VIII. PacTrust

- Founded in 1972 and headquartered in Portland, Oregon
- Privately owned and managed
- Investment partners include the Oregon Public Employee Retirement System and The Washington State Investment Board
- Our Mission
  - Create value and stable returns for our Partners
  - Invest in core commercial real estate assets for the long term
  - Build and maintain solid relationships with our partners, tenants, employees, vendors and communities
  - Continually explore ways to best serve our tenants while also being good stewards of the Earth. Often, these sustainability projects save money. Other times, they're simply the right thing to do
- Our Results
  - High quality commercial real estate projects throughout the Pacific Northwest
  - Knowledgeable, local, long-term ownership commitment
  - Dedicated, responsive management
  - Conservatively leveraged
  - Stable, long-term partners
  - Consistent, strong annual returns to our partners
- Contributor to the Peter Courtney Minto Island Bridge Project
- Salem Chamber of Commerce Member since 2008

- Mill Creek Investments
  - Purchased approximately 26-acres
  - Constructed approximately 116,369 sf in two building
  - Future construction of approx. 280,000 sf in 4-buildings
  - Future construction costs estimated at $21 Million
  - Negotiating the purchase of additional 20-acres
  - Leased 23,945 square feet to Griffin Greenhouse Supplies

IX. Costco Salem

- Existing store opened in 1992
- Involved in Salem Chamber of Commerce for 26 years and Keizer Area Chamber of Commerce for 2 years
- Anticipated Budget for New Location:
  - $40 Million for off-site contribution, site improvements, building and equipment
  - $9 Million inventory at opening
  - Local contractors will be hired if qualified and local building supplies purchased if available
- Positive Financial Impact on the Community:
  - $730,000 currently spent on payroll per month
  - Over 80,000 Costco members
  - 381 employees, 85% of which live and shop in the Salem area
  - Salary: 22
  - Full Time: 187
  - Part Time: 172
- Sales in Fiscal Year 2018 expected to be greater than $250 Million
- Last year's business/real estate tax was $289,000, this year is expected to be $299,000
- $444,500 paid in state income tax
- $228,134 paid in property tax
- $62,895 paid in personal property taxes
- Monthly expenses with local service vendors run around $3,000. Local service vendors regularly used:
  - Code Electric has been with us since opening (1992)
  - Russell's Landscaping has been with Costco since opening (1992)
  - Superior power sweep
  - A-1 Straight Line Striping Co
  - Stutzman Plumbing
  - Roto Rooter
- New Location will mean higher sales, increased employment opportunities (50-75 additional jobs), higher tax revenue
- Charitable and Community Involvement:
  - Costco participates in the school backpack program. The average warehouse gets 420 backpacks, however, the Salem store receives twice the number of backpacks due to the greater need in the area.
  - Salem Costco raised $46,869 for the Children's Miracle Network last May. This money goes to Doernbecher Children's Hospital.
  - Salem Costco raised $22,822 for the United Way to be used in the Salem area.
  - Volunteer Reading program.

- Each day, a different non-charitable foundation collects day-old bakery items. Here are a few:
    - Marion/Polk food Bank
    - Willamette Valley Food
    - Union Gospel Mission
    - Hope Station
    - 400-600 pounds of produce donated daily to a local farmer, keeping it out of the landfills
- Active in animal rescue programs, supportive of active military and coaches. Several former employees have recently become law enforcement officials.

- Costco is in negotiation with several parties that have expressed an interest in purchasing their existing 13-acre site, which demonstrates that there is no shortage of interest in their existing site.

The Site Plan Application meets all applicable development standards. It is also a good project that the city has enthusiastically supported and spent significant resources approving. We hope the City Council will affirm the staff recommendation of approval for this Application. The Applicant does not object to the 17-Conditions of Approval for the Application affirming the applicability of the October 23, 2018 Decision. In the words of the December 10, 2007, 49 decision, the Project of which the Application is a part:

> "will promote commercial development that can serve several neighborhoods, and will provide for the mechanism to upgrade all adjacent transportation facilities to meet current standards so they perform at an adequate level of service which they do not now do. The proposal will provide for additional right of way along Kuebler Boulevard and Battle Creek Road SE for bike lanes, and provide for future up-grades to all adjacent existing intersections."

In closing, this Application incorporates the work of many licensed, experienced professionals in architecture, civil engineering, traffic engineering, landscape architecture, planning, and wetlands delineation. Thank you for your consideration of the facts and information that is provided as the basis for the conclusions in support of this Application.

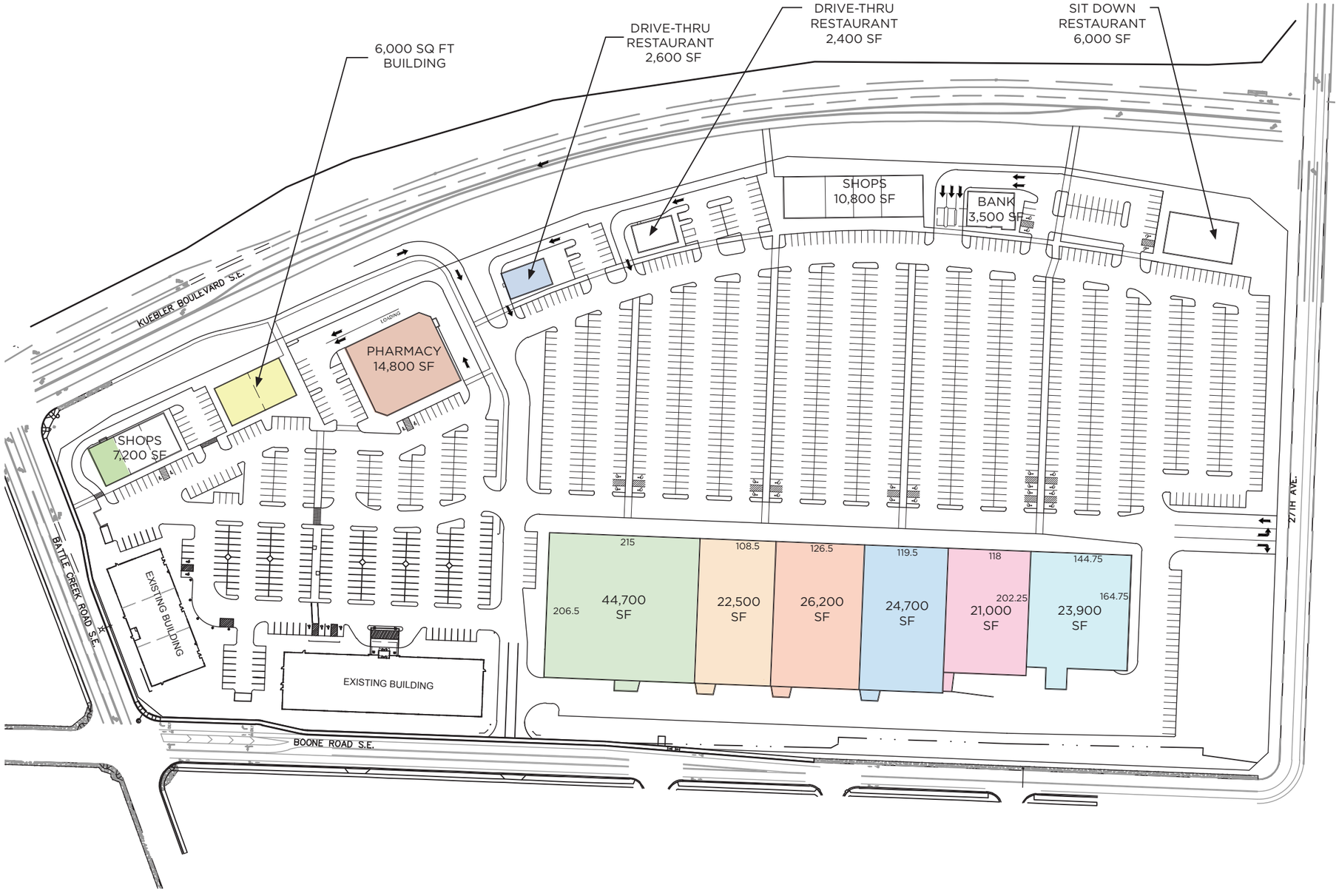
Sincerely,
Pacific Realty Associates, L.P.

Shari L. Reed
Vice President

EXHIBIT A.1, A.2, A.3 and A.4

Shopping Center Layout Concepts

EXHIBIT A.1



SITE AREA SF	1,232,500
BUILDING SF	258,600
COVERAGE %	21%
SHOPS SF	28,000
PHARMACY SF	14,800
BANK SF	3,500
GROCERY SF	44,700
JUNIOR ANCHORAGE SF	118,300
[EXISTING] OFFICE	38,300
DRIVE-THRU RESTAURANTS	5,000
SIT DOWN RESTAURANT	6,000
TOTAL	258,600
PARKING	1579
PARKING RATIO	6.1/1000

2120066.01 MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

KUEBLER
SALEM, OREGON
03-08-16

NORTH

0 80 160 320 1"=160'

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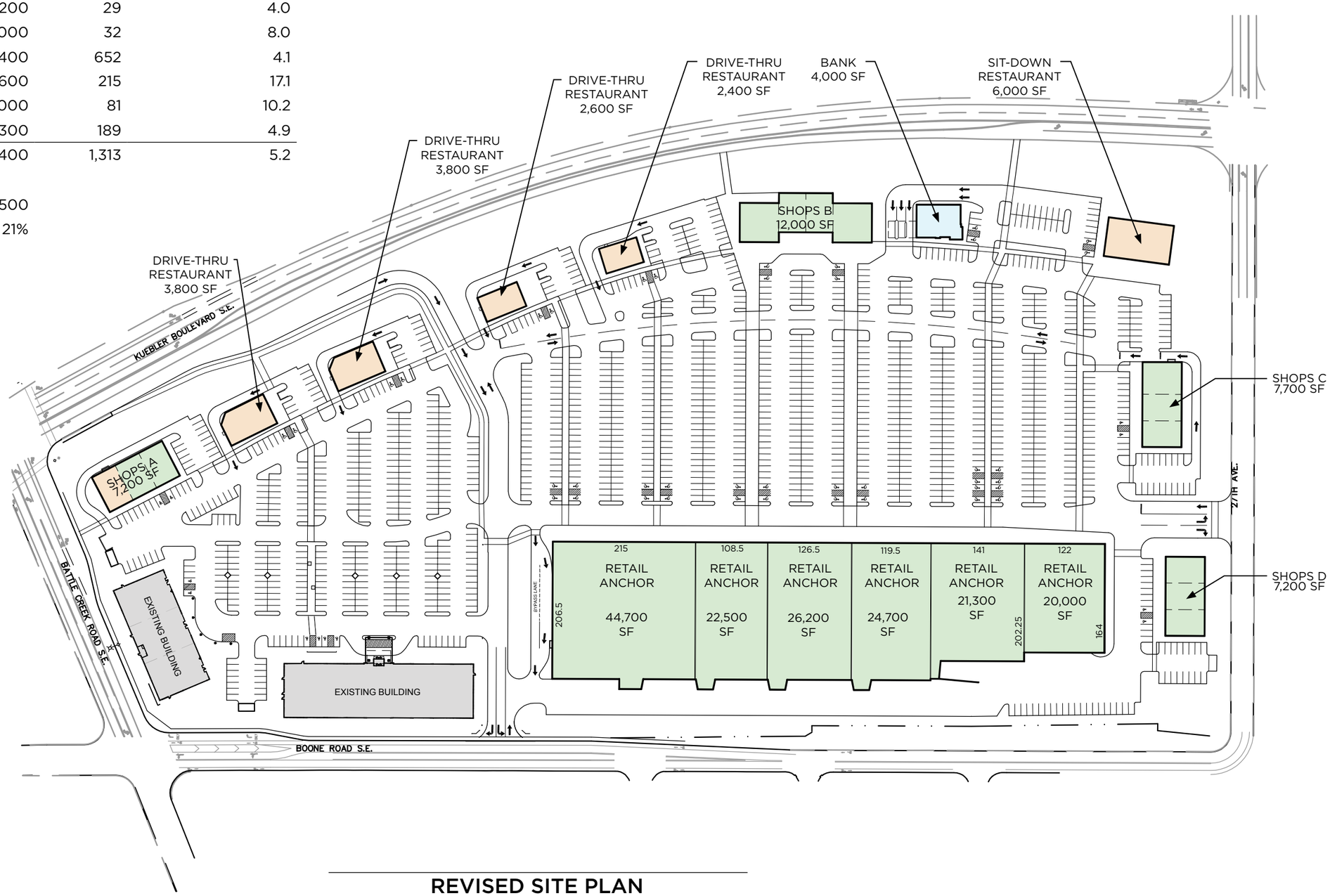
Pacific Realty Associates, L.P.

EXHIBIT A.2

BUILDING	SF	STALLS	RATIO (/1000 SF)
SHOPS A	7,200	32	4.4
SHOPS B	12,000	52	4.3
SHOPS C	7,700	31	4.0
SHOPS D	7,200	29	4.0
BANK	4,000	32	8.0
RETAIL ANCHORS	159,400	652	4.1
DRIVE-THRU RESTAURANTS	12,600	215	17.1
SIT-DOWN RESTAURANT	6,000	81	10.2
EXISTING OFFICE	38,300	189	4.9
TOTAL	254,400	1,313	5.2

SITE AREA SF	1,232,500
COVERAGE %	21%



REVISED SITE PLAN

KUEBLER
SALEM, OREGON
05-16-16

NORTH

1"=160'

0 80 160 320

2120066.01

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DESIGN DRIVEN | CLIENT FOCUSED

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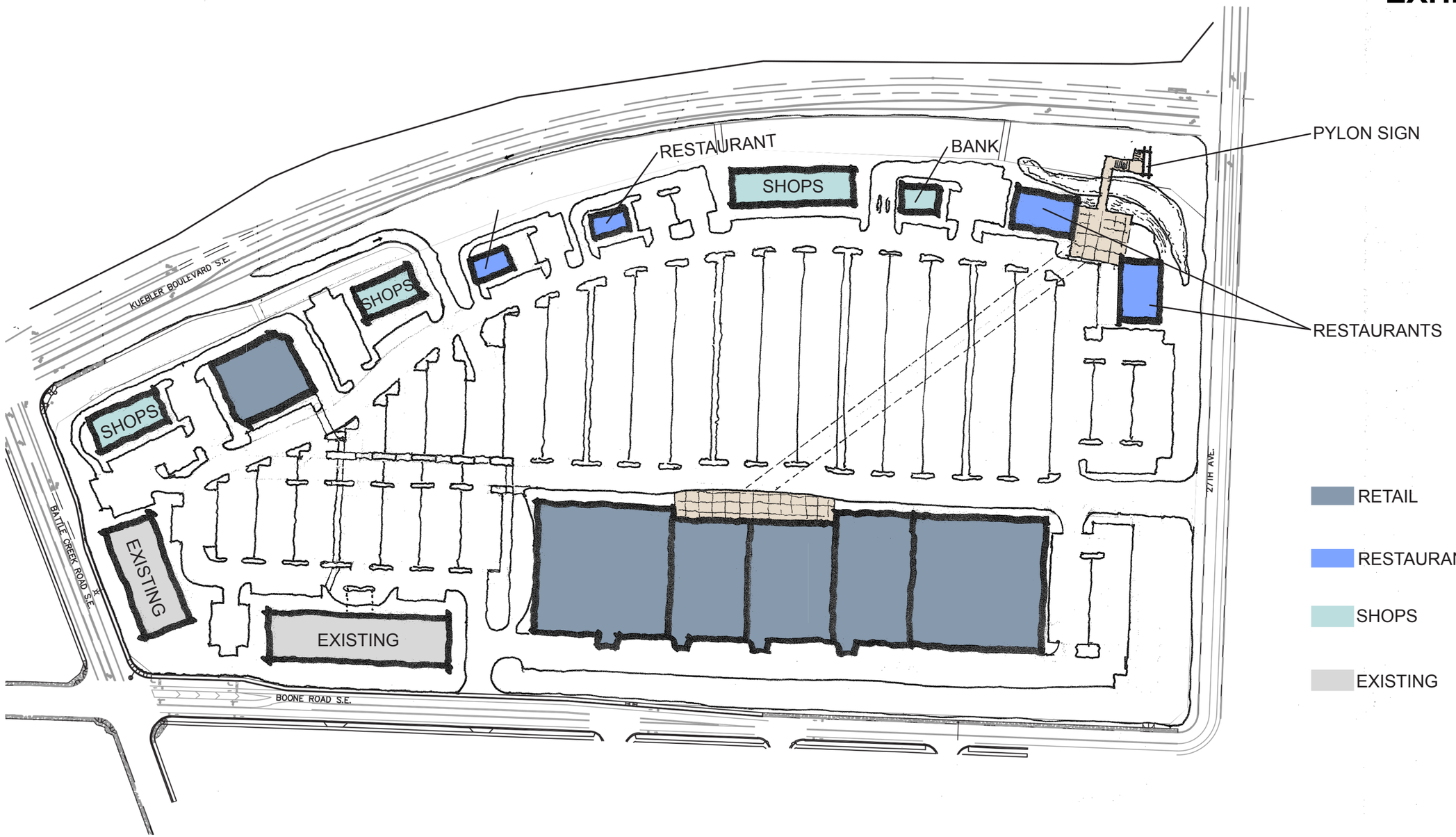
Pacific Realty Associates, L.P.

EXHIBIT A.3


RESTAURANT
BANK
SHOPS
PYLON SIGN
RESTAURANTS
SHOPS
SHOPS
KUEBLER BOULEVARD S.E.
BATTLE CREEK ROAD S.E.
EXISTING
EXISTING
BOONE ROAD S.E.
27TH AVE.
RETAIL
RESTAURANTS
SHOPS
EXISTING
NORTH
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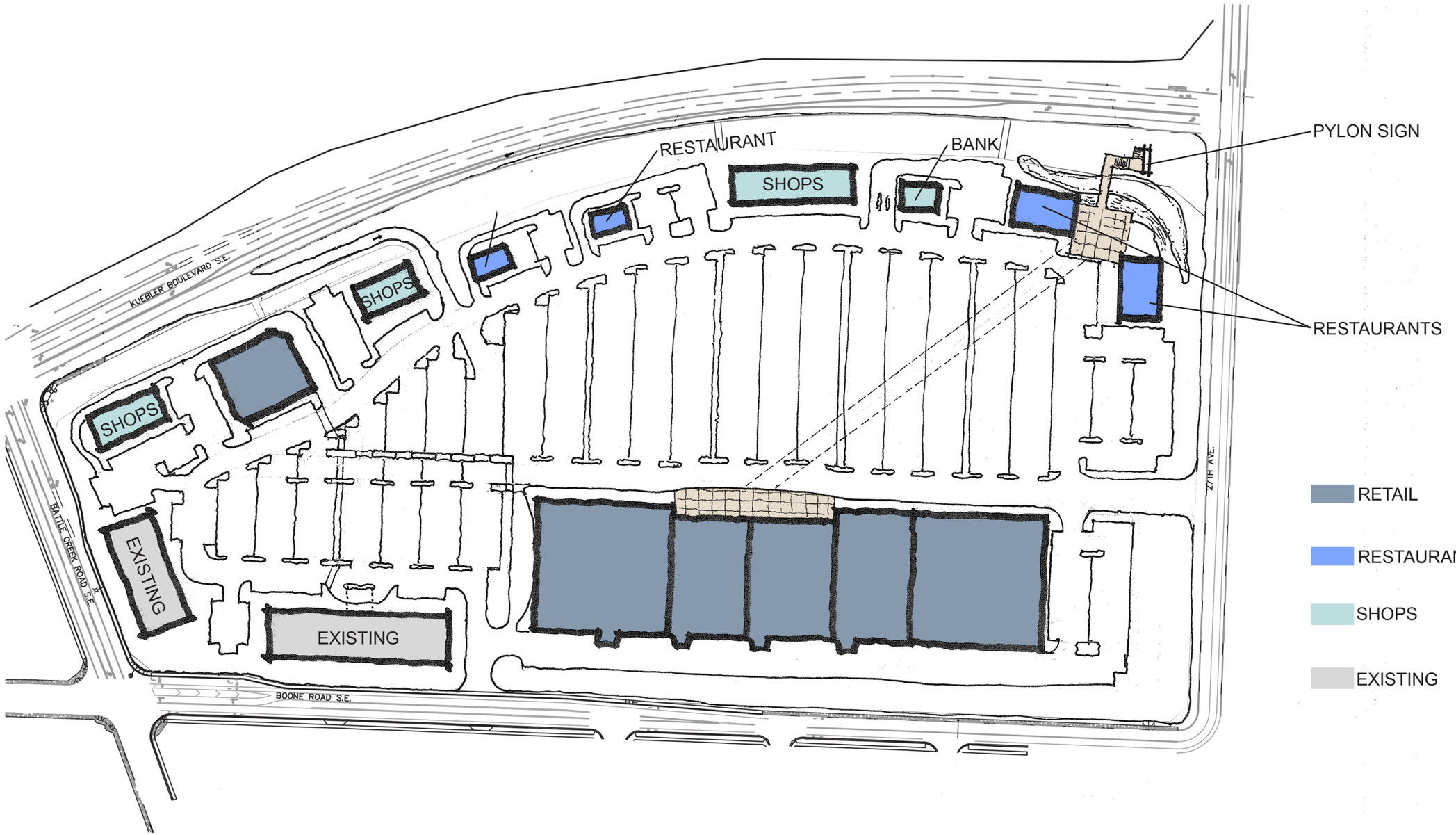
80
160
320
1"=160'
PACTRUST
Pacific Realty Associates, L.P.

EXHIBIT A.4



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KUEBLER
SALEM, OREGON
03-22-16

NORTH

0 80 160 320 1"=160'

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Pacific Realty Associates, L.P.

EXHIBIT B

Potential Retail Stores

Following are examples, in general, of typical square footage for various uses in today's retail marketplace:

- Grocery- typical free standing store (Safeway, Albertsons, etc.) vary from 25,000 to 96,000 sf. (Note the 45,000 s.f. Albertsons on Commercial St. is closing because it is no longer viable.)
- Whole Foods 55,000
- Trader Joes 15,000
- If they also carry general merchandise, pharmacy and soft goods as well as groceries (WalMart, Target, Fred Meyer, etc.) the range is 90,000 to 200,000 sf.
- Costco 150,000-200,000
- General merchandise- varies in size from 8,000 to 50,000 sf. Examples are Michaels (20,000), Bed Bath and Beyond (30,000), Cost Plus World Imports (18,000), Pier 1 (10,000), Office Max (10,000), Jo-Ann Fabrics (35,000), GI Joes (50,000), Best Buy (30,000) and Ulta Cosmetics (10,000)
- Soft goods- wide range from 5,000 to 100,000 sf. Chicos would be at the smaller end, Kohl's and JC Penney at the larger end. Many different sizes in between.
- Crate & Barrel - 50,000
- Pharmacy- 10,000 to 15,000 sf. Walgreens, Rite Aid, etc.
- Banks - 3,000 to 5,000 sf
- Restaurants- fast/casual, full service - 2,000 to 8,000 sf
- Pet- 10,000 sf to 15,000 sf. PetsMart, Petco
- Shops space- 1,000 to 3,000 sf. Coffee, ice cream, gift shops, card shops and miscellaneous specialty shops

EXHIBIT C

Required Completed and To Be Completed Offsite Site Work

PacTrust Funded Improvements

$3 Million Kuebler Widening - 2016

- Eastbound through lane, bike lanes and sidewalks from Commercial St. to the I-5 onramp.
- Eastbound R-turn lanes at Battle Creek, Site Entrance, & 27th Ave.
- Westbound R-turn lane at 27th Ave.
- Traffic signal modifications at Battle Creek & 27th Ave.

$0.685 Million Improvements - 2013

- Boone Rd. widening added L-turn lane & R-turn lanes.
- Battle Creek Rd. widening, added L-turn lane & R-turn lanes.
- Traffic signal modifications at Battle Creek & Kuebler.

$2.2 Million Proposed Improvements - 2018

- Boone Rd. widening, & 27th Ave. widening.
- New Traffic Signal at Battle Creek & Boone Rd.
- Battle Creek & Boone Rd. intersection improvements
- Traffic signal modifications at Battle Creek & Kuebler and 27th & Kuebler.

KELLINGTON LAW GROUP, PC

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Email: wk@klgpc.com

November 30, 2018

Via Electronic Mail

Honorable Mayor and Members of the City Council
c/o Aaron Panko
Planner III
City of Salem
555 Liberty St SE, Room 305
Salem, OR 97301

RE: Kuebler Gateway Shopping Center File No. SPR-DAP 18-15

Dear Honorable Mayor Bennett and Members of the City Council:

This letter is written on behalf of the applicants for the above referenced matter, M & T Partners and Pacific Realty Associates (PacTrust). Please include this letter in the record for Kuebler Gateway Shopping Center File No. SPR-DAP 18-15. Thank you for your consideration.

I. Basic Legal Premises that Apply to this Review

In a 2007 Decision[1], the City Council approved a shopping center on the subject property. Under that 2007 Decision, the subject 23.47 acre site is ***required*** to be developed with a "retail shopping center."[2] In fact, that is the ***only*** allowed use of the subject property. Thus, not only is a shopping center a use permitted outright on the subject property under its CR zoning and the 2007 Decision, it is the ***only*** use permitted outright on the subject property. It is also relevant that the City Council's 2007 Decision affirmed the first level approval by the Planning Commission.

The City Council's 2007 Decision was appealed to LUBA. The opponents asserted in their LUBA appeal that the TIA supporting the 2007 Decision was inadequate and they claimed that the transportation impacts of a 299,000 sq. ft. shopping center were not

[1]City Council CPC-ZC 06-6 (hereinafter for simplicity "2007 Decision"). The City Council's 2007 Decision, the Traffic Impact Analysis (TIA) upon which it was based, the City Hearings Officer's 2009 and 2012 Decisions which built on and were based upon the 2007 Decision, are included with this letter as Exhibit 1.

[2] 2007 Decision p 14: "[T]he proposal is specifically limited by conditions of approval in this decision" and 2007 Decision at p 3:

Condition 14: The subject 18.4 acre property shall be developed with a retail shopping center. The maximum amount of gross leasable area (GLA) for the retail shopping center on the subject property shall be 240,000 GLA. If the subject property is

adequately mitigated. LUBA decided the opponents were wrong and agreed with the City that the approved shopping center met all required transportation mitigation standards for a 299,000 sq. ft. shopping center.

This means that the 2007 Decision's determinations that (1) all transportation impacts from a retail shopping center composed of 299,000 sq. ft. have been completely and appropriately mitigated, (2) through the year 2025, have been thoroughly reviewed in a final land use decision.

Challenges to a prior land use decision constitute an impermissible collateral attack. *Doney v. Clatsop County,* 142 Or App 497, 503 (1996) (a final land use decision that approves development is "conclusive" and it is unlawful for local government to collaterally attack that final land use decision in the guise of acting on a subsequent permit); *Martin v. City of Central Point*. __ Or LUBA __ (LUBA No. 2016-042, September 22, 2016); *Just v. Linn County,* 59 Or LUBA 233, 236 (2009); *Lockwood v. City of Salem,* 51 Or LUBA 334, 344 (2006); *Butte Cons. v. City of Gresham,* 47 Or LUBA 282, 296, *aff'd* 195 Or App 763 (2004) (assignments of error that collaterally attack a decision other than the decision on appeal do not provide a basis for reversal or remand); *Gagnier v. City of Gladstone*, 38 Or LUBA 858 (2000) (once land use approval is issued for a variance, the city is prohibited under the "no change in the goalposts" rule of ORS 227.178(3) from demanding the application of different standards to issue the building permit.); *and see Richardi v. City of Eugene*, ___ Or LUBA ___ (LUBA No. 2018-083, October 24, 2018), slip op 11.

The legal principle forbidding collateral attacks on final land use decisions extends to conditions of approval contained in a prior land use decision, even those that may have been issued in error. Such conditions of approval in final land use decisions are also insulated from collateral attacks. *Graser-Lindsey v. City of Oregon City*, 72 Or LUBA 25, 34-35 (2015) (challenge to condition of approval imposed in prior zone change approval that allowed development of property prior to adoption of area concept plan constitutes an impermissible collateral attack on the decision). Likewise, any errors made in reaching a prior land use decision that was not appealed cannot be used as a basis for challenging a subsequent land use decision that relies on the prior decision. *Olson v. City of Springfield*, 56 Or LUBA 229 (2008). If the decision is not challenged and the error corrected at the time the decision is made, the land use decision becomes final and cannot be subsequently attacked.

Particularly instructive here, LUBA has held that the principles of collateral attack apply to challenges to the traffic count numbers and other transportation system analysis that underlay a previous, final land use decision. In *Graser-Lindsey v. City of Oregon City*, __ Or LUBA __ (LUBA No. 2016-044, November 22, 2016), LUBA held that opponents could not challenge the adopted and acknowledged 2013 TSP, on the grounds that it underestimated the amount of traffic that would be generated by full build out, in challenging a decision to adopt an area concept plan. The findings for the area concept plan relied upon trip counts and mitigation measures from the 2013 TSP to demonstrate

compliance with the Goal 12 Transportation Planning Rule (TPR). Simply put, parties cannot collaterally attack the underlying data and analysis of a final land use decision.

This means that in this site plan review proceeding, any challenge to the transportation-related analysis, conclusions, or conditions of approval from the previous 2007 Decision approving a plan/zone change for a shopping center on the site, constitutes an impermissible collateral attack on that final land use decision. This includes challenges that a shopping center of up to 299,000 sq. ft. adversely impacts the adjacent or surrounding transportation systems; the estimated number of trips used in calculations to determine the traffic impact and mitigation for a 299,000 sq. ft. shopping center; the analysis of volume to capacity ratios or other analytical conclusions or methodologies used in the 2007 Decision to determine that the traffic impacts from a 299,000 sq. ft. shopping center on the property are adequately mitigated, were in error. No aspect of that final decision can be challenged in this proceeding. But that is what opponents do in their arguments about traffic impacts from the proposal.

The fact that the 2007 Decision established the universe of traffic analyses and traffic related mitigation for a shopping center consistent with that which is proposed in this site review, was even confirmed by the Hearings Officer in approving the 2009 zone change for the 10 acre portion of the site upon which proposed retail pads are located as well as where the medical/dental offices are located. *See* 2009 Decision at p 2,[3] and p 5.[4]

- The ***only*** site review standard related to traffic associated with site review is SRC 220.005(f)(3)(B):

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[3] The Hearings Officer believes that each zone change must be independently reviewed as to whether or not it complies with the Transportation Planning Rule (TPR). The applicant asserted that the traffic impact analysis (TIA) submitted for the 2006 zone change suffices, because that TIA assumed a zone change on the acreage now subject to this application. The opponent argued that newer data needed to be developed to satisfy the TPR. However, the testimony of the traffic engineer representing the applicant convinced the Hearings Officer that the original TIA was an appropriate analysis for this zone change. The traffic engineer emphasized the fact that trip potential rather than traffic volume, is the key, and that that has not changed between the previous zone change and this application. The trip potential assumed the CO zone. Beyond that, development of the site would ensure safe, convenient pedestrian access between the main entries of the building on the site, the parking areas, and the surrounding development. Furthermore, transit service is provided via Routes 6, 12th, and Battle Creek. Bicycle lanes will be required in conjunction with street improvements.

[4] The Traffic Impact Analysis (TIA) submitted for the abutting property's Comprehensive Plan change and Zone Change (CPC/ZC 06-6) encompassed developments on the subject property. In that application, the applicant stated that those 18.4 acres and the 9.96 acres of the subject property would be developed together. The applicant since purchased the subject property and still plans to develop the properties together. Therefore, the subject property shall be held to the same conditions of approval for street improvements as the abutting 18.4 acres and the following condition shall apply:

> "The transportation system provides for the safe, orderly, and efficient circulation of traffic *into and out of* the proposed development, and negative impacts to the transportation system are mitigated adequately[.]" (Emphasis supplied.)

The first thing that jumps out is that this site review standard evaluates *only* the transportation systems that are *internal to the site and that are immediately adjacent to it*. It *does not require* any further area be analyzed and certainly does not require a replication of the vast TPR review which occurred as part of the 2007 Decision. Under the SRC, the TIA for site plan review is used to address transportation related concerns set forth in the approval criteria. Those are different than the approval criteria for a plan or zone change. Those differences affect the scope and primary focus of the TIA prepared for each type of application. Thus, it is important to understand that site review does not invite collateral attack on the 2007 Decision or an analysis of whether the shopping center's traffic impacts have been adequately mitigated in the surrounding area.

This understanding of the distinction between site review and a broader TPR analysis was confirmed by the Oregon Supreme Court in *Siporen v. City of Medford*, 349 Or 247, 263-65, 243 P3d 776 (2010).[5] The Court sustained Medford's explanation that the TIA for zone changes looks to the broader adequacy of traffic services for the area as provided by the TSP – whether the street system in the surrounding area is adequate to serve the subject property with permitted uses. *Id.* at 264-65. Site plan and architectural types of reviews, however, have a narrower focus. A site review TIA focuses on analyzing the traffic flow on the site, points of ingress and egress, and adjacent street improvements. *Id.* at 263.

The framework discussed and approved in *Siporen* is similar to that provided in the SRC. The approval criteria for zone changes, for example, requires compliance with the comprehensive plan (which includes the TSP) and with the statewide planning goals (which include Goal 12 Transportation and the TPR). *See*, SRC 625.005(e)(1)(C) and (D). Consequently, the TIA for the prior plan amendment and zone change used the highest permitted trip volumes for existing zoning of undeveloped properties (to include the subject property) in its calculations. Ultimately, in the 2007 Decision, the City imposed conditions of approval (transportation facility improvements) to guarantee that development of the property would be consistent with the TSP and Goal 12. Furthermore, subsequent amendments to the TSP were adopted factoring in the fact that these conditions continue for development of the subject property.

The relevant site plan criteria have a narrower focus and examine on-site and immediately adjacent issues. SRC 220.005(f)(3) provides, in relevant part, that site plan review shall be granted if:

[5] The site plan criteria under the Medford code are largely similar to those under SRC 220.005(f)(3) and impose additional examination of existing and proposed off-street parking and "loading" considerations. *Siporen*, 349 Or at 263, footnote 11.

"(B) The transportation system provides for the safe, orderly, and efficient circulation of traffic into and out of the proposed development, and negative impacts to the transportation system are mitigated adequately;
"(C) Parking areas and driveways are designed to facilitate safe and efficient movement of vehicles, bicycles, and pedestrians[.]"

This focus on the site itself and its immediate vicinity is confirmed by SRC 220.001, the purpose statement for Site Plan Review:

> "The purpose of this chapter is to provide a unified, consistent and efficient means to conduct site plan review for development activity that requires a building permit, to ensure that such development meets all applicable standards of the UDC, including, but not limited to, standards related to access, pedestrian connectivity, setbacks, parking areas, external refuse storage areas, open areas, landscaping, and transportation and utility infrastructure."

Consequently, the fundamental differences between the TIA for a zone change application and a site review application are the scope and primary focus of the TIA so that it will adequately address the relevant approval criteria. Here, a TIA for site plan review has a significantly narrower focus and serves the fundamental purpose to examine circulation of traffic into and out of the proposed development, as well as within the development itself, and propose mitigation measures to address negative impacts (if any) that flow from the specific design proposal. This includes access to and from the immediately adjacent transportation facilities that result from the design of the project. SRC 220.005(f)(3)(B) and (C).

There is and can be no serious dispute that the internal transportation systems and circulation "in and out of the proposed development" are wholly adequate: all "negative impacts" are mitigated, the arrangement of circulation is safe, orderly and efficient.

Correspondingly, if not tautologically, there can be no serious dispute that the *larger transportation system,* which includes the immediately adjacent transportation systems evaluated in the 2007 Decision, have been conclusively determined to function adequately with a shopping center larger than that which is proposed, through the year 2025. Those determinations cannot be collaterally attacked now, as *Siporin* makes clear. While it is appropriate for site review to examine the particular layout of the stores, parking and circulation to determine whether there is any particular problem, that is not what the opponents challenge. Rather, they take aim at the transportation impacts of a shopping center on a very large transportation system and collaterally attack the 2007 Decision's determinations of adequacy and capacity in the immediately area, and these challenges are clearly prohibited, unlawful collateral attacks. Given the opponents' approach, it is important to recall that the 2007 Decision determines that, as conditioned, a shopping center composed of 299,000 sq. ft.:

(1) Is safe.

a. "The proposal is consistent with the functional role of all affected streets * * *. The area currently does not have safe and adequate pedestrian and bicycle facilities. *The proposal will significantly improve* the affected area streets to City standards and such facilities will be supplied under the proposal." (Emphasis supplied.) 2007 Decision, p 45-46.

b. "At present there are no pedestrian connections or safe pedestrian walking opportunities to and around the subject property. The proposal allows for crosswalks and sidewalks. The proposal enables people living at least within a one quarter (0.25) mile of the Subject Property to walk to medical services as well as to shopping and related services. *This is a significant improvement in the pedestrian opportunities provided*." (Emphasis supplied.) 2007 Decision, p 48.

c. The shopping center development of the property provides "a safe and convenient transportation system." Incorporated Staff Report, p 23.

(2) Is orderly and efficient.

a. "the provision of services and facilities will be timely, orderly and efficient." 2007 Decision, p 23; Incorporated Staff Report, p 17.

b. "The transportation system in this area makes access to the property direct, efficient and convenient." 2007 Decision p 33.

c. "The use of this site as proposed will contribute to an efficient arrangement of land uses within the UGB, and to the efficient use of urban services * * *". 2007 Decision, p 33; Incorporated Staff Report, p 18.

d. "Based on the existing street systems, access to the site by multiple modes of transportation will be direct and efficient. * * *" Incorporated Staff Report, p 18.

e. The proposed shopping center use of the site maintains a "compact and efficient urban area." Incorporated Staff Report, p 23.

f. "The basis for the proposal is the recognition that services should be located in proximity to residential neighborhoods in order to reduce travel distances, make more efficient use of the transportation system, and afford the public transportation alternatives, among others." Incorporated Staff Report, p 35.

g. "The future development of the site will result in efficient use of the property and the available public utilities. The proposal is consistent with the transportation and commercial policies in the Comprehensive Plan, and is consistent with the policies for commercial development." Incorporated Staff Report, p 41.

(3) <u>All negative transportation impacts are mitigated</u>.

a. "Council finds that the evidence in the record establishes that the project is mitigated such that the impacts on the performance standards for the transportation system are the same in the 2025 horizon as would occur under existing [residential] zoning. In other words, the applicant as conditioned in this decision, under the TIA, will put measures in place such that are the end of the 2025 planning horizon it has mitigated all of its impacts * * * in a manner that [the shopping center development] does not cause any of the adverse consequences to the transportation system [prohibited by the TPR]."[6] 2007 Decision, p 25.

Accordingly, with all due respect, there can be no reasonable dispute that the site review requirement in SRC 200.005(f)(3) is satisfied as the Staff Decision explains: that internal circulation and the immediate transportation access in and out of the site are safe, orderly, efficient, and that all adverse impacts are completely mitigated.

Further, while not relevant to site review, it is also clear that the 2007 Decision conclusively determines that surrounding transportation systems will function adequately with a shopping center of the size proposed here.

The 2007 Decision finally determined the transportation impact analysis area for the approved shopping center on a large potentially affected area; it finally determined the specific transportation impacts associated with the approved shopping center; and established required mitigation for all of the broader and localized transportation impacts for a 299,000 sq. ft. shopping center ***<u>through the year 2025</u>***, regardless of whether a smaller shopping center were actually developed. All the same transportation mitigation conditions apply to the shopping center to be approved in this site review, even though it is composed of a 189,550 sq. ft. retail shopping center with 38,512 sq. ft. of medical/dental offices for a total of 228,062 sq. ft., which is fully 70,938 sq. ft. smaller than the 299,000 sq. ft. that the 2007 Decision requires to be fully mitigated, regardless of the fact that the shopping center actually built has fewer impacts than presumed in the 2007 Decision.

As such, the 2007 Decision is a final land use decision that may not be collaterally attacked in this proceeding. A shopping center as proposed is allowed and all of its traffic impacts have been mitigated. Any issues that were or could have been raised in the 2007 proceeding are prohibited from being revisited in this site review. This includes the adequacy of transportation mitigation and analysis of impacts of a 299,000 sq. ft. shopping center.

[6]Which means all transportation systems will have adequate capacity and all adverse traffic impacts are fully mitigated.

II. Correcting Misinformation

There has been a fair amount of misinformation concerning the above matter. We point out below what this matter is about and, importantly, what it is not about.

- There are a significant number of required conditions that are very expensive to satisfy, that must be satisfied, to establish the only permitted use of the site –a shopping center. Many of the required conditions of approval have already been satisfied by the applicants as staff explained in its decision, which opponents appealed. *See* the applicants' Issue Summary also submitted this date. As should be plain from the applicants' Issue Summary and the challenged Staff Decision, a shopping center of the size proposed here (189,550 sq. ft.) is necessary for the impacts of the proposed development to be even minimally "roughly proportional" to the city's-required approximately $6.265 million in payments including the dedication of real property to the city valued and other exactions required to develop the subject property with its only allowed use:

Kuebler widening paid to the City in 2015	$3,000,000
Offsite Improvements completed to date	$685,000
Value of Land dedicated to City to date	$80,000
Future Offsite Improvements	$2,200,000
Value of Land for ROW related to roundabout	$300,000
Total Offsite Improvement Costs	$6,265,000

See Dolan v. City of Tigard, 512 US 374 (1994) (exactions demanded in exchange for land use approvals have to be roughly proportional to the impacts of the proposed development). These exactions are for a 299,000 sq. ft. shopping center. Refusing to allow the proposed shopping center means that the exactions lack the required "rough proportionality" to comply with the federal and state constitution's "unconstitutional conditions" taking standards.

- The applicants have looked for 10 years to find a viable anchor tenant for the site. The only other potential anchor retail candidate to Costco was Walmart, which opponents have made clear they would strongly resist.[7] Since the time of the 2007 Decision, the economics and demographics of shopping centers have changed. The particular mix of anchor tenant, office and retail pads that is shown on the site plan, is likely the ***only*** economically viable development option for the site. Refusing to approve the site plan for the proposed shopping center use that is permitted outright, will likely leave the subject property with no economically viable use. *Lucas v*. South Carolina *Coastal* Council, 505 U.S. 1003 (1992) (development restrictions imposed by

[7]Studies have established that smaller tenants cannot make the site pencil; making smaller tenants significant risks of spiraling into bankruptcy.

local government that leave no or substantially no economically beneficial use result in an unconstitutional taking of property under the federal 5th Amendment to the United States Constitution – and parallel provisions in the state constitution). Relatedly, it would not be possible to establish or maintain a shopping center when the particular mix of tenants is made subject to political approval, rather than the rule of law. To the extent it matters, Costco was always listed as a possible part of the tenant mix for the shopping center. *See* Exhibit 2 which is a document that PacTrust presented to SGNA in 2006 in response to SGNA's question about possible tenants of a shopping center on the subject property. SGNA's assertions to the contrary reflect simply a seemingly high turnover in the neighborhood association's leadership since the site was approved for a shopping center and a lack of institutional memory.

- Opponents of a shopping center on the site have over time objected to pretty much everything – they've objected to "strip mall" development,[8] objected to a "factory outlet,"[9] objected to certain stores,[10] and demanded particular tenant mixes they would view favorably. If the City's goal were to make all the opponents happy, it could never do so. Fortunately, that is not the test, and the 2007 Decision did not require any particular tenant or tenant mix and the proposed shopping center mix here is completely consistent with the 2007 Decision.

- The fact that the anchor tenant is Costco is no lawful basis for denial of the applicants' site plan. The level of opposition from a group of vocal opponents for such a strong community partner like Costco is shocking given (1) the City has a deficit of commercial lands and commercial uses as staff has explained; (2) commercial uses have left the City in startling numbers; (3) the subject site is located along major arterials; (4) the site is zoned Commercial Retail; (5) the subject site is specifically approved for a retail shopping center; and (6) the City's professional staff have established that the proposed shopping center meets all relevant criteria.

- It is plain from the site review TIA, which the City's professional staff and ODOT have approved, that the traffic impacts from the particular tenant mix proposed here are ***significantly fewer than the traffic impacts that the City approved*** and required to be mitigated in the ***2007 Decision***. The overwhelming weight of the evidence is that all adverse traffic impacts from the proposed shopping center have been adequately mitigated, and then some, by the date of the shopping center opening in 2019.

- The applicants are mitigating for ***a larger shopping center*** than is proposed. The 2007 Decision requires the applicants to mitigate for 9,660 net new daily trips, 900 net new weekday pm peak hour trips, and 1,350 net new Saturday mid-day peak hour trips. 2006 TIA, p 3. The proposed 189,550 sq. ft. retail shopping center will generate only 7,743 daily trips, 747 weekday pm peak hour trips, and 986 Saturday mid-day peak hour trips.

[8] Opponent John Miller PowerPoint presentation, May 7, 2007.
[9] 2007 Decision, p 18.
[10] 2007 Decision, p 29.

Please understand that even combined with the trips associated with the approved medical and office uses, the proposal generates 12% *fewer daily trips* than assumed in, and required to be mitigated by, the 2007 Decision. It does not pass the straight face test that the applicants should provide even more mitigation for impacts it will not have.

- Understand further, that the applicants' compliance with the 2007 Decision's conditions of approval actually mitigates for a *314,000 sq. ft. retail shopping center*. This is because the 2006 TIA supporting the 2007 Decision evaluated the traffic impacts and required mitigation for a 290,000 sq. ft. shopping center and 24,000 sq. ft. medical/dental office building. *See* 2006 TIA, p 25, Table 5.

- Under the 2007 Decision, the 2009 Decision, the 2012 Decision, and the Staff Decision here, the applicants have made and will continue to make the area transportation system better than they found it. In the words of City staff, Eric Destival in 2007, "When the road improvements are done, all intersections will operate better with the development than without it."[11]

- In this regard, the 2007 Decision specifically acknowledges:
"At present, the *system currently fails*. Therefore, *the proposal and its required mitigation efforts will improve the transportation system* adequately mitigating its own impacts to enable and establish Goal 12 and TPR compliance." (Emphases supplied.) 2007 Decision, p 24.

- The site review TIA methodology is appropriate, consistent with all City requirements, and has been approved by both the City's professional staff and ODOT. The opponents' claims and speculation to the contrary is insulting to the applicants' professional traffic engineering team, to the City's professional staff, and to ODOT professionals who have uniformly concluded that the TIA correctly analyzes relevant information and properly provides the evidentiary foundation to establish that the proposal meets all required applicable standards.

- The 2007 Decision determined that a shopping center of up to 299,000 sq. ft. is an allowed "Community Shopping Center."[12] The 299,000 sq. ft. figure was determined to represent the dividing line between a community center and a regional center. Opponents' claim that a shopping center composed of less than 299,000 sq. ft. is an unlawful collateral attack on the 2007 Decision.

- The applicants have vested their right to develop their property with a retail shopping center as they have proposed, having expended and given away real property to the City in exactions having a value of more than $3.68 million in off-site transportation improvements, and $80,000 in land dedications to the city. These exactions have solved existing deficiencies, having nothing to do with the development of the applicants'

[11]Planning Commission January 23, 2007 minutes, p 4.
[12]2007 Decision, Condition 14, p 3; and p 7.

shopping center at the site, and these expenditures and exactions that have provided significant additional transportation system capacity that other developers have enjoyed to avoid being required to pay their fair share. The applicants' expenditures in such off-site improvements to fund public infrastructure including the public transportation system are *exclusively referable* to the approved shopping center as proposed.

III. Specific Opponent Objections

Both SGNA and an attorney for individual opponents, as well as various individual opponents, have raised objections to the Staff Decision approving site review. Almost all of their objections assert that the proposed shopping center will have adverse traffic impacts and they speculate that the approved and required mitigation is inadequate to resolve those impacts. They are mistaken and their issues in this regard are unlawful collateral attacks on the City's 2007 Decision which decision thoroughly vetted all transportation impacts from the proposal and mitigated for all of them and more. PacTrust is not properly considered the funder of all transportation infrastructure in South Salem, as some may think. The applicants have and will improve the area transportation system more than their share under the 2007 Decision, but it is unfair to demand, and cannot be demanded, that the applicants do more than that. In the main, most of the opponents' claims are unlawful collateral attacks and are irrelevant to this proceeding.

Also, please understand that in 2007, the SGNA Neighborhood Association recommended approval of a shopping center of up to 299,000 sq. ft. at the site without restriction on tenant mixes or types, other than SGNA did not want Walmart or a factory outlet at the site and neither are at issue here. When specific store names were bantered about, one that came up as a potential anchor in the 2007 Decision proceedings was Fred Meyer. Fred Meyer stores are on average composed of 165,000 sq. ft. – the same as the proposed Costco here. Both the applicants and the City relied upon SGNA's representation that it had vetted and approved a shopping center at the subject site which included no limitation on specific stores or types of stores. SGNA's approval, while not strictly necessary, played a large role in the 2007 Decision approving the property for a shopping center of up to 299,000 sq. ft. SGNA's objections in 2018 are disappointing and surprising. They are objections that wholly could have been but were not raised as a part of the 2007 Decision approval process. As such, they too are unlawful collateral attacks on the City's 2007 Decision.

1. Size, Scale and Use

The use of the property as a shopping center was conclusively decided in the 2007 Decision. The size and scale of the shopping center was conclusively decided in the 2007 Decision. The use, size or scale of the shopping center and its constituent stores are not subject to challenge or review in this site review proceeding. They are similarly not a basis for denial of the proposed site plan. This proceeding is merely the review of an application for Site Review. It is a technical review of the physical characteristics of the shopping center use that is required to be established upon the site and that is permitted outright in the

CR zone. The application for site review is an application for a "limited land use decision" and its review is limited to a determination that the applicable site review standards are met. ORS 197.015(12). The City's comprehensive plan does not apply, its TSP does not apply, and the TPR does not apply. ORS 197.195. Site review is not a review of zoning or of the uses allowed in the zone. Rather, the approval criteria for this application are:

> (3) *Class 3 site plan review.* An application for Class 3 site plan review *shall be granted* if:
>
> (A) The application meets all applicable standards of the UDC;
> (B) The transportation system provides for the safe, orderly, and efficient circulation of traffic into and out of the proposed development, and negative impacts to the transportation system are mitigated adequately;
> (C) Parking areas and driveways are designed to facilitate safe and efficient movement of vehicles, bicycles, and pedestrians; and
> (D) The proposed development will be adequately served with City water, sewer, stormwater facilities, and other utilities appropriate to the nature of the development."

The opponents' claims about the size, scale or use of the development simply do not address any of the approval criteria for a Class 3 SPR, per SRC 220.005(f), and cannot be considered in the review of this application.

The proposed site plan is for approval of a shopping center with fewer square feet – smaller size and scale – than what is approved for the use of the property. The development proposed in this SPR application totals 189,550 sq. ft. of retail space. Together with the 38,512 sq. ft. of medical/dental office space on the adjacent ten acres, with which the property is being developed as a whole, the total GLA for the entire shopping center is 228,062 sq. ft.

Neither the 2007 Decision, nor its conditions of approval, nor the Salem Revised Code in general, place any limits on the size of any particular store in a shopping center. The 2007 Decision did not specify or limit the size of any building in this shopping center. The proposal complies with the limits on the GLA imposed by the Decision, and in fact is less than what was approved.

City Council Resolution 87-136, adopted November 9, 1987, defined "regional commercial or retail center" to be a development composed of 300,000 sq. ft. or more of gross leasable space. The proposed development is less than that. The proposal is consistent with what was represented in 2006 and approved in the 2007 Decision. *See* 2007 Decision, p 10.

The proposed shopping center is consistent with the definition of "shopping center" in SRC 111.001 (which did not exist when a shopping center was approved on the site in 2007):

> *"Shopping center* means a group of businesses falling primarily under the retail sales and service use category that form a centralized unit and that have a joint parking area available for use by patrons of any single business."

The development consists of a large-format retailer with an associated fuel station. This will form a group of businesses in a centralized unit. A joint parking area will be available for use by patrons of all of the businesses. All of the planned uses are retail and service uses included in the CR zone.

A Costco store is consistent with the Use Characteristics description in SRC 400.045 – Retail Sales and Service:

> "(b) *Retail sales.*
>
> (1) *Characteristics.* Retail sales is characterized by the sale, lease, or rental of products directly to final consumers, but may include the sale, lease, or rental of products to contractors. Visits by customers are generally not scheduled. Stores are typically open to the general public."

Costco sells directly to final consumers, customer visits are not scheduled, and the store is open to the general public. It is consistent with the description of retail sales.

As noted, the proposed use is a shopping center in the CR zone – the only use allowed by the 2007 Decision. Gas stations are permitted outright in the CR zone, per SRC 522.005 Table 522-1, and a gas station is commonly found as an integrated part of a retail shopping center, as at the Fred Meyer shopping center on Market Street, and at the Safeway store on South Commercial. In addition, the SRC definition of shopping center is "a group of businesses falling primarily under the retail sales and service use category" (underscore added). The fuel sales will be on the same property, under the same ownership, and accessory to the primary retail sales and service uses in the shopping center. It will be integrated with the shopping center by using the same access driveways and on-site circulation system. In fact, to use the gas station one must be a Costco member. It will not be a stand-alone use. Under these circumstances, fuel sales are allowed as part of the shopping center.

Costco is not characterized as a wholesale or warehouse use. SRC 400.095 describes wholesaling as:

"(a) *General wholesaling.*

"(1) *Characteristics.* General wholesaling is characterized by sales of physical products primarily to customers other than the general public, including retailers, other wholesalers, and industrial, commercial, institutional, farm, or business users. The general public rarely comes to the site. Products are generally stored on-site, and may also be assembled, sorted, graded and/or re-packaged on-site. For establishments primarily engaged in sales to industrial, commercial, institutional, farm, or business users, activities on the site may also include on-site sales or order taking display areas. Products may be picked up on-site or delivered to the purchaser. General wholesaling takes place primarily within an enclosed building, and does not include the sale of dangerous, toxic, or potentially contaminating products."

Because Costco sells to the general public, and the general public are the customers that come to the site, the store is a retail sales use and is not a wholesaling activity.

In addition, the SRC definition of shopping center is "a group of businesses falling primarily under the retail sales and service use category" (underscore added). The fuel sales will be on the same property, under the same ownership, and accessory to the primary retail sales and service use in the shopping center. It will be integrated with the shopping center by using the same access driveways and on-site circulation system. It will not be a stand-alone use. Under these circumstances, fuel sales are authorized as part of a shopping center, including this one.

2. Traffic

Opponents devote a great deal of time attacking the Kittelson site review TIA. The short answer is that almost all of their objections are unlawful collateral attacks on the 2007 Decision, because they essentially argue that the approved shopping center will have additional and unmitigated traffic impacts. These arguments all could have been raised in the 2007 Decision proceedings and, in fact in large part were raised in those proceedings, and opponents' objections to traffic and traffic mitigation for the shopping center have been completely resolved against them by the 2007 Decision. To the extent that any of the opponents' objections relate to the narrow scope of the site review TIA – such as objections to the methodology used in the site review TIA –they are mistaken. The methodology used in the site review TIA is consistent with the City's code and was fully vetted and approved by the City's professional staff, as well as ODOT. To the extent that other objections can be constructed as being within the narrow scope of the site review TIA (something that we do not see), they are similarly mistaken as explained in the Kittelson's, Kuebler Gateway Shopping Center Response to Appeal of Decision Memorandum, dated November 29, 2018 attached as Exhibit 3.

3. Tree Preservation

The development site includes eight Oregon white oak trees. These are defined as "Significant trees" in SRC 808.005. However, it is important to understand that the existing trees are not designated as "Heritage trees." Heritage trees may *only* be designated as provided in SRC 808.010:

> "(a) *Designation of heritage trees.* The Council may, by resolution, designate a heritage tree upon nomination by the property owner, in recognition of the tree's location, size, or age; botanical interest; or historic or cultural significance."

In order for the Council to designate a heritage tree it must first be nominated by the property owner. The property owner has not nominated any tree for this designation. Since the property owner has not nominated the trees for designation as "Heritage" trees they do not "qualify for listing as heritage trees."

There are eight Oregon white oak trees that are proposed to be removed by the development plan. To compensate for this necessary loss, the landscape plan included in this application provides for the planting of 54, 2.5" caliper new Oregon white oak trees.

Removal of significant trees for construction of a commercial or industrial development is authorized in SRC 808.030(2):

> "(L) Removal of Oregon white oaks (Quercus garryana) where the removal is necessary in connection with construction of a commercial or industrial facility[.]"

Removal of the eight trees is necessary in connection with the construction of the commercial retail shopping facility. Please refer to Exhibit 4, Weisman Design Group, INC, PS Landscape Design Narrative dated November 28, 2018 in this regard. Removal of these trees is undeniably necessary in order to use the property for the only use of the property that is allowed under the 2007 Decision. As is plain to see from the sample site plans attached as Exhibit 5 to this letter, there is no possible shopping center of up to 299,000 sq. ft. that can be situated on the subject site and still save the oak trees. As explained previously in this letter, because of the extreme costs of compliance with required conditions of approval, it is not possible to establish a shopping center that is any smaller than that which is proposed here and still have an economically viable project. Moreover, the location and arrangement of the buildings and supporting facilities for the approved shopping center is necessary to provide for the proper, safe and efficient access, parking, and internal circulation system. The location of the major anchor building will separate the vehicle parking and circulation areas from the neighborhood to the south.

4. Stormwater and Wetlands

Opponents assert that the applicants have not complied with "wetland and stormwater quality requirements." Their main concern seems to be that they believe relevant documents establishing compliance with wetland and stormwater requirements were not on the city website. Whether those documents were or were not on the city website, the applicants do not know. However, there is no basis to believe that all documents relied upon by the applicants for approval or by staff in making the challenged Staff Decision were not available to any member of the public who wanted to review them at the City's offices during normal business hours. And this is all that is required.

To the extent opponents (SGNA) complain about wetland and stormwater requirements on their merits, they are mistaken. As the Staff Decision makes clear, the applicants have completely demonstrated compliance with all wetland and stormwater requirements. SGNA and Mr. Anuta's speculation to the contrary is simply mistaken. There cannot be a serious dispute otherwise. In this regard, please refer to (i) Exhibit 6, Dowl Engineering's, Response to Appeal Memorandum, dated November 28, 2018, (ii) Exhibit 7, Dowl Engineering's Drainage Report, dated November 7, 2018, and (iii) Exhibit 8, Pacific Habitat Services Status of State and Federal Removal/Fill Permits, dated November 27, 2018.

5. Air Quality

Mr. Anuta complains that air quality impacts are required to be, and have not been, evaluated. He is wrong for two reasons. First, air quality impacts have in fact been thoroughly vetted for a shopping center on the site as a part of the 2007 Decision, and second, air quality is not a relevant approval criteria for site review.

As to the first, the 2007 Decision which approved a shopping center on the site of up to 299,000 sq. ft. specifically evaluated any air quality concerns that might be associated with a shopping center of up to 299,000 sq. ft. and determined there were none. The 2007 Decision determines at p 19:

The major impact to air quality in the vicinity is vehicle traffic along Kuebler Boulevard and I-5, which are the major traffic routes in the area. Kuebler Boulevard is designated as a Parkway in the Salem Transportation System Plan (STSP), which is defined as an arterial designed to carry 30,000 to 60,000 vehicles per day. I-5 is a Freeway, with a design capacity of 50,000+ vehicles per day. Under the "worst case" traffic impact scenario for development of the Subject Property, as described in the Applicant's TIA, the Subject Property could generate 10,820 net new trips per day. Under its current zoning, the Subject Property could generate an estimated 4,575 net new trips per day. The net increase over these two development scenarios is 6,245 vehicles per day. ("Pass-by" traffic, which is those vehicles that are already on the street, is expected to make up about a third of the estimated total traffic volume.) New traffic generated by the Applicant's proposed use will be a part of the exceptionally high volume traffic that is already in this area.

The proposed use itself will not create a significant air quality impact. Also, part of the traffic generated by commercial uses on the site will be in place of traffic that would otherwise have to travel to similar services located elsewhere, and at greater distance; therefore any impact to air quality will simply be relocated and will not compound air quality problems, at the worst. There is a reasonable expectation that the proposed use will comply with state and federal environmental standards that it must satisfy in order to be built. However, there are no state or federal air quality standards that will be required to be satisfied in order for the proposed use to be built. Nevertheless, Council finds that there are no additional impacts to air quality from the proposed use. *See Friends of the Applegate v. Josephine County*, 44 Or LUBA 786 (2003).

Further, Council finds that the proposal supplies a walkable or bikeable destination for a significant number of occupants of the residential developments in the vicinity served as well as significant pass-by trips from vehicles on Kuebler Blvd. stopping as a part of a trip they otherwise have to make. Council finds that this opportunity for people residing in the vicinity to have a nearby community facility as proposed supplies a significant incentive to use alternate modes of transportation for medical services, shopping, restaurants and services than otherwise exists in the vicinity. To the extent that even a few people would walk or bike instead of drive for a cup of coffee with friends or for a doctor appointment, the proposal has a reasonable chance to reduce impacts to air quality from what otherwise would be a car trip.

Thus, Mr. Anuta's concerns are ones that could have been, and in fact were in large part, raised, decided and finally resolved in the 2007 Decision. Mr. Anuta's objections on this basis are nothing more than a plain vanilla, unlawful collateral attack on the 2007 Decision – raising issues that could have been and that in fact were raised and finally resolved in that proceeding.

6. Records Available for Review

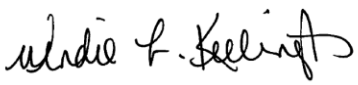
Opponents complain that unspecified public records were not available to them to review online. It is difficult to respond to this indictment when the opponents do not identify the records about which they complain. Regardless, the short answer is that all records related to the application have always been available for review at the City's offices during normal business hours to anyone who wanted to review them. The applicants have confirmed with City staff there were no secret records withheld from the public. Whether public records were or were not available online on a website is irrelevant. All materials related to the application have always

been available to the public at all times when the City was otherwise open for business. This is all that is required. Opponents demonstrate nothing to the contrary that undermines this conclusion.

SUMMARY

In summary, the applicants respectfully request that the City Council affirm its professional staff's determination that the application for site review meets all relevant standards and therefore must be approved. Thank you for your consideration.

Very truly yours,



Wendie L. Kellington

WLK:wlk
CC: Clients

EXHIBIT 1

City Council 2007 Decision, 2006 Traffic Impact Analysis, City Hearing's Officer's 2009 and 2012 Decisions

EXHIBIT 2

List of Potential Retail Tenants

EXHIBIT 3

Kittelson and Associates Response to Appeal of Decision Memorandum
Dated November 29, 2018

EXHIBIT 4

Weisman Design Group, INC, PS Landscape Design Narrative dated November 28, 2018

EXHIBIT 5

Sample Site Plans

EXHIBIT 6

Dowl Engineering's, Response to Appeal Memorandum dated November 28, 2018

EXHIBIT 7

Dowl Engineering's Drainage Report dated November 7, 2018

EXHIBIT 8

Pacific Habitat Services Status of State and Federal Removal/Fill Permits
Dated November 27, 2018.

BEFORE THE CITY COUNCIL OF THE CITY OF SALEM

IN THE MATTER OF AFFIRMING THE DECISION OF THE PLANNING COMMISSION FOR COMPREHENSIVE PLAN CHANGE/ ZONE CHANGE CASE NO. 06-6-CPC/ZC FOR PROPERTY LOCATED AT THE 2500 BLOCK OF BOONE ROAD, SE, MARION COUNTY) ASSESSOR'S MAP NUMBER T8S R3W S12, QUARTER SECTION C, TAX LOTS 1800, 1900, 2000 AND 2100	ORDER NO. 2007-16-CPC/ZC COMPREHENSIVE PLAN CHANGE/ ZONE CHANGE NO. 06-6-CPC/ZC

This matter coming regularly for hearing before the City Council of the City of Salem, Oregon, at its August 6, 2007 meeting, and the City Council, having received evidence and heard testimony, hereby references and incorporates the attached Facts and Findings, attached as Exhibit A, and adopts the following Order, with conditions of approval as set forth in Exhibit A, in support of affirming the decision of the Planning Commission in Comprehensive Plan Change and Zone Change Case No. 06-6-CPC/ZC.

ORDER:

The Planning Commission decision on Comprehensive Plan Change and Zone Change, Case No. 06-6-CPC/ZC, as proposed and with conditions of approval, and as modified herein, is hereby affirmed.

This order constitutes the final land use decision and any appeal hereof must be filed with the Oregon Land Use Board of Appeals within 21 days of the date that notice of this decision is mailed to persons with standing to appeal.

Exhibit A: Facts and Findings, dated December 10, 2007

ADOPTED by the Council this 10th day of December, 2007.

ATTEST:

City Recorder

EXHIBIT A

FOR CITY COUNCIL MEETING OF: December 10, 2007
AGENDA ITEM NO.: 7 (a)

TO:	**City Council**
FROM:	**Glenn W. Gross, Urban Planning Administrator**
STAFF:	**Judith Moore, Senior Planner**
FINAL ADOPTION DATE:	**December 10, 2007**
APPLICATION:	**Comprehensive Plan Change/Zone Change 06-6**
LOCATION:	**2500 Block Boone Road SE; Marion County Assessor's Map Number T8S R3W S12 Quarter Section C, Tax Lots 1800, 1900, 2000 and 2100**
SIZE:	**Approximately 18.4 acres**
REQUEST:	**To change the Salem Area Comprehensive Plan Map designation from "Developing Residential" to "Commercial" and to change the zoning from RA (Residential Agriculture) to CR (Commercial Retail) for an 18.4-acre site located in the 2500 Block of Boone Road SE.**
APPLICANT:	**Pacific Realty Associates, L.P. (PacTrust)**
APPROVAL CRITERIA: Chapter 64	**Comprehensive Plan Map Amendment: Salem Revised Code,** **Zone Map Amendment: Salem Revised Code, Chapter 114**
COUNCIL MOTION:	**APPROVE the Comprehensive Plan/Zone Change, subject to the following Zone Change Conditions**

(1) The intersection of Battle Creek and Boone Roads SE shall be improved to include a traffic signal with dedicated westbound left-turn lane, westbound right-turn lane and an eastbound left-turn lane. The southbound left-turn lane shall be lengthened to provide a minimum of 300 feet of storage.

(2) The intersection of Battle Creek Road SE and Kuebler Boulevard shall be improved to provide exclusive eastbound right-turn lane and a northbound left-turn lane with a minimum of 300 feet of storage. To provide the necessary northbound left-turn storage at this intersection with the southbound left-turn lane storage at Battle Creek and Boone

Roads, side-by-side left-turn lanes shall be constructed as approved by the Public Works Director.

(3) The south side of Kuebler Boulevard shall be widened to meet City of Salem Standards with curb, sidewalk and bike lanes. The widening shall extend from 1500 feet west of Battle Creek Road SE to the Interstate 5 ramps to provide an additional lane for a total of two eastbound lanes.

(4) Dual left turn lanes shall be constructed on eastbound and westbound Kuebler Boulevard at 27th Avenue SE. Only one eastbound left-turn lane will be striped as there is only one receiving lane. For the westbound left turn lanes, an additional receiving lane shall be constructed which will drop immediately south of the subject property's driveway on 27th Avenue. The intersection of Kuebler Boulevard at 27th Avenue SE shall also be improved to provide an exclusive eastbound right-turn lane.

(5) In addition to boundary street improvements required by Salem Revised Code (SRC) 77.150, the developer shall coordinate with the city and use best practices for design and location of site access and shall construct left-turn lanes and pedestrian refuge islands where appropriate.

(6) The developer shall commit up to $5,000 for traffic calming devices (such as speed humps or other traffic calming measures) to be used in the residential neighborhood south of the proposed development if a need is identified. The Neighborhood Traffic Management Program is the process used to identify traffic calming needs.

(7) The developer shall provide right-in access from Kuebler Boulevard with a design that minimizes impact to through vehicles and provides a safe driveway crossing for bicycle and pedestrian traffic the final design of which to be approved by the Salem Public Works Director. In addition, the developer shall complete the widening of the eastbound lanes of Kuebler Boulevard west to Commercial Street. This additional widening of approximately 1300 feet of Kuebler Boulevard is considered as payment for a grant of access on Kuebler Boulevard to allow a right-in driveway on the Subject Property.

(8) The developer shall offset their access driveway along Boone Road SE from Cultus Avenue at a location approved by the Salem Public Works Director.

(9) The applicant shall establish a landscaped setback along the street frontages of the project area to provide buffering and screening from the street frontage. Along Kuebler Boulevard, the setback shall be a minimum of five (5) feet in depth from the property line, as required in the CR Zone, Salem Revised Code (SRC) 152.080. Along Boone Road SE and 27th Avenue SE, the setback shall be a minimum of fifteen (15) feet in depth where the project area lies opposite residential uses.

(10) The developer shall provide sidewalks along all street frontages. The sidewalks may be located inside the setback area as part of a landscape plan.

(11) The developer shall provide landscaping within the street frontage setbacks as required in SRC 132.

(12) The developer shall provide a brick or masonry wall with a minimum height of six (6) feet along the interior line of the landscaped setback along Boone Road SE and 27th Avenue SE, opposite residential uses. The applicant/developer may provide a landscaped berm within the setback in lieu of a wall.

(13) The developer shall provide sidewalks at all driveway entrances to the development. The internal pedestrian accessway shall be distinct from the vehicular travel lanes by means such as striping, distinctive pavement, elevation, or other method that clearly distinguishes the area for pedestrian travel from vehicle travel.

(14) The subject 18.4 acre property shall be developed with a retail shopping center. The maximum amount of gross leasable area (GLA) for the retail shopping center on the subject property shall be 240,000 GLA . If the subject property is developed in conjunction with the abutting 10.08 acre property (for simplicity referred to as a 10.0 acre property) currently owned by the Salem Clinic (083W12C tax lot 702 5.5 acres and 083W11D tax lot 600 4.58 acres), the total amount of retail GLA and medical/dental offices on the two properties shall not to exceed 299,000 GLA. As such, the total GLA for a shopping center and offices on the combined properties if developed together, shall not exceed 299,000 GLA. The City shall have the right to enforce this condition through the enforcement procedures in its code or through a post acknowledgement plan amendment using required City and state procedures restoring the Residential plan designation and RA zone to the property.

(15) All improvements shall be built as outlined and as set forth in the November 21, 2006 staff report to City Council, including the widening of Kuebler Blvd. from the I-5 Interchange to Commercial Street and the right-in access from Kuebler to the property (except as modified by this Order).

(16) Prior to issuance of a certificate of occupancy for any building on the subject property the following traffic improvements shall be completed; 1) The funded City CIP project to construct improvements on Kuebler Boulevard as identified in the applicant's September 2006 TIA; 2) all traffic mitigation improvements required to be constructed by the Developer as conditions of approval in this decision, and; 3) In addition to other traffic mitigation improvements required as conditions of approval, the Developer shall construct an exclusive right-turn lane at the westbound Kuebler Boulevard intersection with 27th Avenue. The traffic improvements that the Developer is responsible for, in addition to the right-turn lane at westbound Kuebler and 27th Avenue, are as specified in conditions of approval 1 through 7 of this decision.

(17) The applicant, at the time of development application, shall coordinate with the Salem Area Transit District to enhance transportation and bus facilities on the site.

Procedural Findings:

On June 2, 2006, Pacific Realty Associates, LP, (the Applicant) filed a Comprehensive Plan Change/Zone Change application to change the existing Salem Area Comprehensive Plan (SACP) designation from "Developing Residential" to "Commercial" and the zoning from RA (Residential Agriculture) to CR (Retail Commercial) for an 18.4 acres of real property located in the 2500 Block of Boone Road SE, and identified in the tax records for Marion County as T8S R3W S12 Quarter Section C, Tax Lots 1800, 1900, 2000 and 2100 (the Subject Property).[1]

The Subject Property was annexed into the City in November, 2001. The Subject Property is rectangular in shape, and slopes to the northeast. The Applicant's proposal is to develop the Subject Property in conjunction with a 10-acre property abutting the Subject Property on the west (the Abutting Property), to "establish a coordinated and unified retail; service, and office center to serve the major residential district that is emerging in the surrounding area." The Abutting Property is owned by the Salem Clinic and identified in the tax records of Marion County as 083W12C, Tax Lot 702 and 083W11D Tax Lot 600.

The Subject Property is developed with a house and barn located near 27th Avenue SE. There are no curbs or sidewalks abutting the Subject Property. Based on the City's aerial photograph taken in 2005 of the Subject Property, off-street access for that property is located along Boone Road SE and 27th Avenue SE.

The surrounding area is developed with single-family dwellings to the south, a church to the north across Kuebler Boulevard SE, a church to the southeast across Boone Road SE, and a private elementary school and office building within an area zoned Neighborhood Commercial land across Battle Creek Road SE.

The SACP designates property to the north (across Kuebler Boulevard SE) and east as "Developing Residential" in the SACP, property to the south (across Boone Road SE) as "Single Family Residential" and property the west as "Commercial."

Salem Transportation System Plan (the TSP) Three streets abut the Subject Property – Kuebler Boulevard SE to the north, Boone Road SE to the south, and 27th Avenue SE to the east. The functional classifications for these streets in the Salem Transportation System Plan (Salem TSP) are, respectively, "Parkway" (Kuebler Boulevard SE) and "Collector" (Boone Road SE and 27th Avenue SE). Battle Creek Road SE lies adjacent to the subject property and abuts the Abutting Property, and is designated Minor Arterial in the TSP.

The Subject Property lies within the South Gateway Neighborhood, which does not have an adopted neighborhood plan under SRC 64.430. Prior to 1995, the property was located within the Morningside Neighborhood, but the Morningside Neighborhood Plan adopted by Ord. No. 67-84 in June, 1984, does not include the Subject Property.

The zoning for the surrounding area is as follows: North, across Kuebler Boulevard SE – RA; South, across Boone Road SE – Single Family Residential (RS); East, across 27th Avenue SE –

[1] A pre-application conference was held for the Subject Property on November 3, 2005 (File Pre-App 05-69).

Urban Transition (UT-10), outside city limits; Northeast, across Kuebler Boulevard SE and east of 27th Avenue SE – RA; Northwest – Commercial Office (CO); and Southwest – RA

The Application was deemed complete on June 15, 2006. The complete Application contained all required information necessary to determine compliance with applicable criteria.

Pursuant to ORS 197.610, the City provided the Oregon Department of Land Conservation and Development (DLCD) 45-day notice prior to the first evidentiary hearing on the Applicant's proposed amendment to the SACP on June 19, 2006.

A decision on the Application was scheduled for February 6, 2007 before the City of Salem Planning Commission. Notice of the Planning Commission hearing was mailed to property owners within 250 feet of the Subject Property on November 2, 2006. Notice of the hearing was given in accordance with SRC 114.050-114.070. On February 6, 2007, the Planning Commission recommended approval of the Application.

On February 26, 2007, the City Council initiated review of the Planning Commission decision pursuant to SRC 114.210.The review was initiated prior to the adjournment of the first regular Council meeting following Council notification of the Planning Commission decision, as required by SRC 114.200. City Council review under SRC 114.200 is "de novo," unless a hearing "on the record" is designated by the City Council upon its own motion.

Notice of the May 7, 2007 City Council *de novo* hearing was mailed to property owners within 250 feet and to all parties to the Planning Commission hearing. Notice of the City Council hearing was posted on the Subject Property on November 9, 2006.

The City Council hearing was held on May 7, 2007. Members of the public submitted oral and written testimony in favor of and opposition to the Application. City staff recommended approval of the Application. Salem-Keizer Transit and the Salem-Keizer School District reviewed the Application and had no objections. The record was left open for additional submittal and answers to Council questions, as well as the Applicant's final written argument which was due on July 2, 2007. The final deliberations were to occur on July 9, 2007.

On or about July 8, 2007 the "Statesman Journal," a Salem newspaper of general circulation within the City of Salem, published an editorial critical of the Application, encouraged the public to contact their City Councilors regarding the Application, and provided the City Councilors' e-mail addresses. As a result, nine people sent e-mail to Council. Eight of the e-mail opposed the Application, one e-mail supported the Application.

Because the editorial and e-mail occurred after the record was closed, the City Attorney advised Council that the editorial and e-mail were *ex parte* contacts under LUBA precedent, and that in order to comply with state law, Council should allow parties an opportunity to respond to the ex parte communications. The Council voted to re-open the hearing to cure the *ex parte* contacts.

On August 6, 2007, Council re-opened the hearing. Notice of the re-opened hearing and its purpose was provided to all persons presenting oral or written testimony at the City Council

hearing, and to all persons owning property within 250 feet of the Subject Property. At the re-opened hearing, attorney Mark Hoyt submitted evidence and argument responding to the single favorable *ex parte* e-mail. No other new evidence or argument was received. Accordingly, The City Council closed the hearing, deliberated and made its oral decision to approve the Application.

APPLICABLE SALEM REVISED CODE CRITERIA FOR A COMPREHENSIVE PLAN CHANGE

SRC 64.040(g) defines a "minor plan change" as "a single proceeding for amendment to the comprehensive plan map that affects less than five privately and separately owned tax lots or a Category 4 plan change as described in SRC 64.050(d)". This request is a Category 4 plan change, because it is a petitioner-initiated request to change the comprehensive plan map with a concurrent rezone under SRC 64.100(c) on land entirely within the UGB. Minor plan changes are quasi-judicial decisions under SRC 64.090, which establishes the approval criteria for Category 4 plan changes. In order to approve a minor plan change, the decision-making authority must make findings of fact based on substantial evidence in the record demonstrating satisfaction of all applicable criteria. Under SRC 64.090(b), the criteria are:

Criterion 1: A lack of appropriately designated suitable alternative sites within the vicinity for a proposed use. Factors in determining the suitability of alternative sites are limited to one or both of the following:

(A) Size: Suitability of the size of the alternative sites to accommodate the proposed use; or

(B) Location: Suitability of the location of the alternative sites to permit the proposed use.

The proposal must satisfy Criterion 1 applying the factors of 1A, or 1B.[2] Here, the proposal meets Criterion 1 and the Council finds that both factors 1(A) and (B) are relevant and support a finding of compliance with Criterion 1.

The Standard

This standard requires evaluation of whether there is a lack of (1) appropriately designated, (2) suitable, (3) alternative sites, (4) within the vicinity, (5) to accommodate the proposed use. Determining the second prong of this standard regarding the suitability of an alternate site is determined based on either or both of the following (A) size of an alternative site to accommodate the proposed use, or (B) location of an alternative site to permit the proposed use. Here, both are relevant.

This standard does not present a public "need" standard. There were claims during the proceedings that SRC 64.090 requires a finding that there is a public need for the proposed use. Council disagrees. The standard does not require a showing of public need, but rather expressly

[2] SRC 64.090(b)(2) supplies an additional alternate basis to approve a minor plan amendment, but that standard is not relied on for this application and is not discussed further.

refers to whether there is a "lack of" alternate sites. This is an intentional choice of words. Council previously amended this specific standard to remove language which included a public need standard and replaced it with the more flexible standard that applies to this application. *See Salem Golf Club v. City of Salem*, 28 Or LUBA 561 (1995) (explaining a previous Salem LUBA case -- *Roden Properties* -- applied a repealed City standard requiring a public need for a plan amendment and that such standard had been replaced with the "lack of" standard); *compare with Roden Properties v. City of Salem*, 17 Or LUBA 1249 (1989) (interpreting the City's previous "public need" standard).

What is the Proposed Use and What Constitutes a "Suitable" Site for the Proposed Use?

The Applicant's proposed use is the construction of a "community shopping center" having not more than 240,000 square feet of gross leasable area (GLA) on the subject 18.4 acres, but also a combined community shopping and service center and office complex on the Subject Property and the Abutting Property together, composed of up to 299,000 square feet of GLA covering the total of 28.4 acres. Thus, the proposal is for a Community shopping and service facility consisting of up to 299,000 square feet of GLA. In terms of considering whether alternate sites are "suitable", this size element of the proposed use becomes relevant. Specifically, in this regard, the size of the proposed use triggers the "size" factor of SRC 64.090(1)(A). At the minimum, a site of 15-30 acres of land is generally required for a community shopping and services facility (also referred to as a community center or community facility). The evidence also shows such a community center is generally composed of between 150,000 to 450,000 GLA. Therefore a community center of 299,000 GLA generally requires the mid to upper end of the general parcel size range for a community facility. Further, the Applicant has submitted site plan examples as well as other evidence for the proposed use establishing that the Applicant's proposed use requires a parcel size larger than the 18.4 acres that is the Subject Property because it plans to develop the property in conjunction with the Abutting Property. The evidence establishes that the Applicant's proposed use requires the entire 28 acre site for its contemplated community shopping and services facility. The Applicant is an experienced and well-respected developer of such facilities. Therefore, the Council finds that the minimum size required for the proposed use is one that is larger than 18.4 acres and that 28 acres is the Applicant's needed size for the community facility it proposes and this is a reasonable parcel size to require for the proposed community center. The Applicant also represented that the distinctive characteristics of the selected area around the Subject Property make the site "suitable" for the proposed use. This is because the area has significant existing as well as emerging residential development, as well as the presence of significant traffic carried by Kuebler Blvd. The purpose of the Applicant's proposal is to provide for commercial retail and medical services at a location that is proximate and accessible to the residential neighborhoods in the surrounding area, including those north and south of Kuebler Boulevard, and east and west of Battle Creek Road. Kuebler Boulevard and Battle Creek Road are the major access routes to the existing and developing neighborhoods in the southeast Salem area. There are no other appropriately designated sites in the vicinity along either of the major streets in southeast Salem.

At the proposed location, commercial services will be accessible from surrounding neighborhoods by multiple, alternate modes of transportation, including pedestrian, bicycle, and public transit. The existing commercial locations along Commercial Street, aside from being too

small to accommodate the proposed use, are not readily accessible by alternate modes of transportation due to their distance from these neighborhoods, and due to a general lack of street connectivity between the neighborhoods and Commercial Street.

The proposed use requires these nearby residential developments and the planned future residential developments in this vicinity, as well as the high traffic of this part of Kuebler Blvd. to supply local consumers requiring shopping services. Conversely, these area characteristics create a strong underserved based of consumers for community commercial services. The Applicant requires a location where the market lacks community shopping services. The subject vicinity is such an area. These are demographic elements that go to the "location" factor of SRC 64.090(1)(B) applicable when considering alternative sites. As used in the SACP, the Applicant's proposed use would be classified as a "Community" level "commercial" use.

The "Goal 1 Coalition" argues the proposed use is a "development," not a use. It is unclear what, if any, difference there is between a "proposed use" and a "proposed development." A "use" is the goal, object or purpose that is sought to be obtained. Therefore, if the use that the Applicant seeks for its property is the construction of a community shopping center, the development and use are identical.

Pursuant to the SRC 64.090(b)(1), a "proposed use" of Subject Property is the purpose that the Applicant intends for the Subject Property, as contemplated by the Applicant.

Appropriately Designated

The appropriate SACP plan map designation is one that allows outright the Applicant's proposed use. Here, the proposed use has been specifically identified by the Applicant as a community shopping center; therefore, the appropriate SACP plan map designation is "Commercial." As used in SRC 64.090(b)(1), the term "appropriately designated" means that, at the time of application, there must be property with a "Commercial" SACP designation that would allow a community retail shopping center and office building complex outright. Property cannot be considered "appropriately designated" if not appropriately designated for the proposed use including where an opponent speculates land could possibly be changed to a "Commercial" designation at some unspecified future time. According to the SACP Plan Map, there are no appropriately sized parcels designated "Commercial" in the south or southeast part of the City. Similarly, there are no such parcels along Kuebler Blvd. in SE Salem.

Opponents identified two parcels that they believe should be considered "Appropriately Designated." One property is located at State Street and Cordon Road, in the northeast part of the Salem urban area (the "Pictsweet Property"). The Pictsweet Property is not within City limits, and is designated "Industrial," not Commercial." The other property is located North of Chemawa Road in North Salem (the "Chemawa Property"). The Chemawa Property is within Salem City limits, but is zoned "Residential Agriculture" and designated "Developing Residential" in the SACP. This is also not a site that is "Appropriately Designated" for the proposed use. Also, the Chemawa Property was annexed into Salem City limits in 2007, and must maintain the SACP and zoning designations for five (5) years from the date of annexation.

(SRC 165.170). Therefore, neither of these two properties has an "appropriate" Commercial" designation for the proposed use, as required by SRC 64.090(1)(b).

Vicinity

The term "vicinity" refers to an area that must be evaluated to determine if the area lacks appropriately designated suitable alternates for the proposed use. The "vicinity" selected by the Applicant is appropriate, reasonable and consistent with the City's standard. As explained in the application, the "vicinity" of the proposed project is the area within the City from east of Commercial Street to the east side of I-5, and from Madrona Avenue on the north to the City limits on the south.

The vicinity selected in this case is reasonable, does not violate any SACP policy and is consistent with the dictionary definition of the term. Within the vicinity selected by the applicant and found reasonable by this Council, there are no sites alone or in combination, of similar size that are already designated Commercial -- appropriately designated -- to accommodate the proposed use. There are only two sites designated for commercial uses east of Commercial Street. One is the Abiqua School site, which is currently fully developed in school and office uses and zoned CN [Neighborhood Commercial]. It is not suitable for the proposed use because of its size and the fact that the property is already fully developed with other uses. The only other property is the so-called Salem Clinic property which abuts the subject property on the west side and is proposed to be developed with the proposed use. Specifically, the 10.0-acre Abutting Property is designated *Commercial*, and its development is intended to be coordinated with the development of the subject PacTrust property to facilitate the development of the proposed use. It is, however, too small standing alone for the proposed use. There are no other Commercially designated sites in the selected vicinity. Further, there are no suitable and available, designated commercial sites along Commercial Street that are of comparable size to the Subject Property alone or the Subject Property and the Abutting Property which are to be developed together. Council finds there is a "lack" of suitable alternative locations for the proposed use in the vicinity selected by the Applicant. Moreover, and in the alternative only, Council finds based on the evidence in the record that it does not matter how vicinity is defined for purposes of this minor plan change, as that there is a lack of appropriately designated suitable alternative sites for the proposed use within the City or even the southeastern part of the UGB – which UGB is irrelevant as explained below.

Evidence was placed into the record from another situation regarding commercially designated land supply in the City. Specifically, evidence was placed into the record regarding the inventory of commercial land within the entire Salem urban area which was examined as a part of the Salem Regional Employment Center "Economic Opportunities Analysis" (EOA) report of October, 2004. This document is attached to the Tross December 5, 2006 submittal. This City of Salem sponsored EOA found that there is a deficit of available commercial land within the UGB for the 20-year planning period (p. 1). According to data provided in the EOA, the total City-wide inventory of vacant commercial land was 239 acres (Table 6). As shown in Table 7, there was only one parcel of 20 acres or larger; and only three parcels between 10 and 19.9 acres. The parcel larger than 20 acres is located at State Street and Cordon Road, in the northeast part of the urban area (the "Picsweet" property). According to the Comprehensive Plan and Zoning

Maps, none of the 10-19.9 acre parcels are found in the south part of the City. None of these parcels are in the "vicinity" of the subject property, and they are not located to provide commercial services to the residential area surrounding Kuebler and Battle Creek. This is further evidence that there are no alternative sites that are appropriately designated in the vicinity of the subject property, and the designation of the PacTrust property for commercial use will provide for commercial services at a location that that lacks a similar commercial site. It is important to note that the Council does not rely on this evidence as anything other than evidence. It is not relied on as a City planning document to which adherence is required.

Opponents argued that the vicinity the Applicant used is incorrect and that a different vicinity should have been used, up to and including the whole City and the UGB. Council rejects these arguments.

SRC Chapter 64 does not define the term "vicinity." The dictionary definition for "vicinity" is "a nearby, surrounding or adjoining region." Webster's II, 1286 (1984). The SACP's only guidance about what the "vicinity" is for the proposed Community Shopping Center, is that a community shopping center serves several neighborhoods. The applicant has shown, and the evidence in the record supports, that the proposal will serve three South Salem neighborhoods and the substantial existing and forecasted traffic on Kuebler Boulevard. The "vicinity" selected by the Applicant represents a large subarea of the south part of the City containing developed and developing residential properties that now lack and will continue to lack commercial shopping and services as are proposed. The "vicinity" that the applicant picked – composed of parts of several developing and developed residential areas within several neighborhoods – is a reasonable one. Where there are no specific criteria that establish how the vicinity must be determined, an area that is reasonable and that does not violate SACP policies may be designated as the vicinity for a particular proposed use. *Standard Insurance Company v. Washington County,* 16 Or LUBA 30 (1987), *aff'd* 93 Or App 78 (1988). The selected vicinity is consistent with City plan policies as well as other City guidance documents for the proposed Community commercial shopping and service facility.

The SACP's Commercial Development Goal is "[t]o maintain and promote the Salem urban area as a commercial center" for Marion and Polk counties. The SACP Commercial Development Goal divides "shopping and service facilities" into three types: regional facilities, community facilities and neighborhood facilities (the three types are identified in the Definitions and Intent section of the SACP which precedes the Comm Devel Goal). The SACP does not quantify the size of neighborhood or community shopping and service facilities. City Council Resolution 87-136, adopted November 9, 1987, defines the terms "regional retail and employment center" and "regional commercial or retail center" to include, among other things, a development composed of "300,000 square feet or more of gross leasable space." The Applicant's proposal is for less than 300,000 square feet of GLA, and therefore is not a "regional retail and employment center" or "regional commercial or retail center" as the Resolution interprets the term. Moreover, the SACP provides general guidance for defining the "vicinity" of each type of facility including the Applicant's proposed Community facility.

Further, the term "Regional" is defined as "of, relating to, or characteristic of a large geographic area." Webster's II, 990 (1988). SACP Policy G(1) contemplates that the "region" is the area

comprised of "the Salem urban area." For purposes of the SACP, the Salem Urban Area is "the area within the Salem City limits and the area within the Salem/Keizer urban growth boundary which is unincorporated and is located to the southeast and west of the common city limits boundary between the cities of Salem and Keizer." *See* SACP III, "Salem/Keizer Urban Area (Regional) Procedures and Policies," A. "Definitions." Regional, therefore, refers to all territory lying within the Salem/Keizer Urban Growth Boundary. Further, City Resolution 87-126 specifically interprets the term "regional retail and employment center" in the SACP, and makes clear that if a development does not fit these criteria, it must be a community or neighborhood facility. The proposal does not fit the characteristics outlined in Resolution 87-126 for a regional facility. Therefore, this is further evidence that the proposal is for a community level facility and that the appropriate vicinity is for the proposed use as a community facility. Other support for this conclusion is in the context of the SCAP.

The Commercial Development Goal contemplates that community shopping and service facilities will generate "major customer traffic" and that a community shopping and service facility will provide "a wide variety of goods and services for a market area of several neighborhoods." *See* SACP IV, "Salem Area Goals and Policies, G. "Commercial Development," Policies 4 and 5. The market area here is for several neighborhoods but is not "regional."

The Subject Property lies along the north boundary of the South Gateway Neighborhood, which abuts the Morningside Neighborhood to the north. In this regard, the SCAP does not define the term ""Neighborhood". The dictionary defines the term "Neighborhood" to mean "a district or area with distinctive characteristics." Webster's II, 789 (1988). A neighborhood therefore can mean either an area with distinctive characteristics or land within Neighborhood Association boundaries, which would approximate a "district.". The applicant has also pointed out that there are three neighborhood associations lying within the Applicant's proposed "vicinity;" all or part of which can be served by the proposed community shopping center. Morningside Neighborhood encompasses approximately 2,100 acres (3.28 square miles), South Gateway Neighborhood encompasses approximately 3,241 acres (5.06 square miles), and Southeast Mill Creek encompasses approximately 5,793 acres (9.05 square miles).[3] The evidence establishes that these three neighborhoods lack suitably designated alternative sites for the proposed use.

Opponents claim vicinity necessarily means a market area of particular stores. Opponents mistakenly stated in the proceedings that "there is no dispute that a 3 to 6 mile radius population will be required to support the use." (Hoyt 6/25/07 p 7). They also state somewhat inconsistently that "a minimum radius of three to five miles" is needed. (Hoyt June 8, 2007 p 10). Opponents also state that the *entire* city is required to serve the proposed community shopping center use. (Hoyt June 8, 2007 Submittal, p 7). Council finds the opponents' claims unpersuasive and do not undermine the Applicant's selected "vicinity".

[3] If the "market area" of these several neighborhoods is 3 to 6 miles as the project opponents' claim, then the evidence establishes that there is a lack of large enough Commercially designated suitable alternative sites within that 3 to 6 mile "vicinity" of the Subject Property, whether the size range is 15-30 acres or a minimum of 18 or of 28 acres.

First, Council rejects the interpretation of the standard that "vicinity" for a community facility as proposed means a market area for a particular store, or several stores. Council notes that LUBA has rejected the opponents' interpretation of the term "vicinity" determining that Salem's use of the term "vicinity" does not mean a "market area." *Salem Golf Club v. City of Salem*, 28 Or LUBA 561 (1995). Council's determination of "vicinity" need simply be reasonable in light of what is proposed and courts will defer to a Council's determination of "reasonable" vicinity.

Using a "market area" of particular stores for the "vicinity" analysis area for a plan amendment is inconsistent with the context in which the term "vicinity" is used. The context of the term "vicinity" relates to a proposed use. Here, the applicant's proposed use is not particular stores, but rather a community shopping and service facility in which it has tenants. The record establishes that a market area for particular stores changes depending on the type of store, and a market area can be larger or smaller based on particular tenant stores in a shopping center. While it is relevant that people in the selected neighborhoods are likely to shop at the proposed community center (the subject property is in *their* market area), it is not relevant to the determination of "vicinity" whether people in other neighborhoods might also shop at a community center. Council further finds that it is not possible to accurately predict the "market area" of a community facility as proposed because a market area will vary with the composition of the tenant stores. Moreover, there is no necessary correlation between the size of stores in a community shopping facility and its "vicinity". For example, the record establishes that Fred Meyer stores range from 60,000 to over 200,000 square feet in size and draw from neighborhoods ranging from 1.6 to 3.6 miles, not whole cities. Further, the Applicant testified that the primary tenants to be sought for the proposed community shopping center are retail, drug store and grocery:

> Those are the primary tenants – again you don't know who is going to show up until you get there. But if you take a look at it, Lancaster is just down the road and has every kind of retail imaginable. Nobody from down there is driving to this shopping center. North Salem is taken care of. Commercial is taken care of. We're not creating something drawing for ten miles, we are responding to a market that exists. A road with 27,000 cars on it that is only going to go up, a neighborhood with very good demographics, which allows you to get good restaurants and uses that people will enjoy. That is what we'll respond to. This idea that we are pulling from all over Salem just isn't going to happen.

On the other hand, it is possible to reasonably predict that the selected "vicinity" which includes SE Salem Kuebler Blvd. traffic and portions of three neighborhoods will use the shopping and services at the Subject Property because the Subject Property is within their market area – meaning the area within which they shop.

The opponents asked Council to restrict the proposed development to the "area to be served." Council does not understand how this would be accomplished. SRC 64.090(1) does not impose a requirement of only specific persons residing in a specific areas be allowed to use shopping services. Similarly, no standard requires that community shopping center serve only those in an "area to be served." Such a requirement would be unreasonable and impossible to enforce. Council declines to impose such a restriction.

Further, Council finds that the term "vicinity" looks to the surrounding area of a particular property, not geographically distant areas. Here, the proposal is for a community shopping center to serve a particular geographic area with distinct characteristics: that of a large existing and emerging residential area and a major transportation facility – Kuebler Blvd. fronting the property. This area lacks suitable alternative sites for the proposed use. It would not be a reasonable or correct interpretation of the term "vicinity" to require geographically distinct areas lacking these characteristics to be considered for the proposed use where the proposed use is to capture consumers travelling on Kuebler Blvd. and the residential consumers in the underserved, large existing and developing residential area of southeast Salem that is the vicinity here.

Accordingly, Council finds it is reasonable to conclude that Kuebler travelers as well as many of the residents within the selected "vicinity" which includes parts of three neighborhoods would consider a retail shopping and service center on the subject property to be in their market area.

Opponents rely on Urban Land Institute (ULI) data to argue the proposal is not for a community shopping center but rather for a "regional" one, necessitating evaluation of a larger "vicinity". However, City Council finds that the ULI data supports the opposite conclusion – *i.e.*, that the proposed development will be a community shopping center. The ULI data establishes the general size range for a community shopping center is between 150,000 to 450,000 square feet. Council finds the Applicant's proposal is for a shopping center of 240,000 square feet on the 18.4 acre Subject Property, combined with the adjoining 10.0 acre property, will result in a total development of up to 299,000 GLA on the combined site of 28.4 acres. Therefore, Council finds that the proposal is a community shopping center, as defined by ULI.

Opponents stated that the lowest end of the ULI community shopping center range (150,000 square feet) is a "typical" community shopping center. Council finds, based on the ULI data as well as the expert testimony of Mr. Loffelmacher, that community shopping centers typically range from a low of 150,000 square feet to a high of 450,000 square feet. Council finds that even if the lowest end of the community shopping center range can reasonably be interpreted as the average or median, that this does not define the "range" and a shopping center can be a "community shopping center" so long as it falls anywhere within the range. Council finds that the proposed facility of 240,000 GLA on 18.4 acres or of up to 299,000 GLA on the totality of the 28.4 acres is within the mid range of the ULI data having the characteristics of a community center.

Opponents state ULI data shows that community shopping centers can serve a range of people – from about 40,000 to 150,000 (Hoyt 6/8/2007 page 8). From this they argue that if there is a vacant Commercially designated site in the entire City, it is a suitable alternative site in the vicinity.

Council has three responses to this position. First, the term "vicinity" cannot be viewed in isolation, but rather must be applied with reference to the rest of the standard in which the term is found and which makes the "vicinity" relevant. The area the proposed use is to serve is a three-neighborhood area in southeast Salem and its significant emerging residential growth as well as the traffic flowing through this area on Kuebler Blvd. which abuts the subject property.

There has been no challenge to Mr. Tross' evidence (Tross letter December 5, 2006) in the record that the three neighborhoods served at least in part by the proposal are expected to have a population of 37,416 when the projects the Applicant was required to anticipate in its TIA -- Falcon Ridge and Fairview -- come on line. Moreover, there is no dispute that Kuebler traffic fronting the Subject Property is estimated to reach 50,000 vehicles per day in the mid to long term.[4] All of which populations are in the "vicinity" and all of which the Applicant was required to, and did account for, in its TIA. In other words, the applicant was required to assume all of these new developments occurred and that Kuebler traffic grew as background traffic as stated above. There has been no dispute about any of these projections or regarding the applicability of these projections. Council finds persuasive the evidence in the record that the proposal serves the three neighborhoods in the "vicinity" that the Applicant and City Staff have identified, and the Kuebler Boulevard pass-by traffic, all of which are proximate to the subject property and as noted, within the "vicinity" the Applicant has selected. Accordingly Council finds it is likely that people who pass by will stop to enjoy the commercial amenities for the property. Council finds that the evidence in the record supports that there is easily a population of 40,000 if not more that will be served by the proposal in the vicinity.

Opponent claims that Kuebler Blvd. traffic counts should be used to determine whether the project is for a Community facility. They argued that using their counts, they estimated that the proposed use will exceed 300,000 square feet. Council rejects this contention and finds that the size of the project is limited by that which is proposed by the applicant and is as stated by the applicant. Moreover, Council finds that the size of the project has been expressly limited by a condition of approval in this decision. In any event, Council finds that traffic counts do not determine the size of a project. The traffic impact analysis supporting the proposal was developed based on a likely "reasonable worst case" scenario of a theoretical mixture of possible uses based on site conditions and the *Institute of Transportation Engineers (ITE) Trip Generation* Manual. The evidence establishes that a project can be a low-traffic generator even though there is more square footage, or a project with less square footage can produce greater trips. Accordingly, while the total traffic volume predicted determines likely impacts and mitigations, the square footage that produces traffic volume is variable depending on the particular nature of uses. Council also notes that under the City's "vicinity" standard, the suitability factors look to the size of a site to accommodate the proposed use as the relevant consideration. SRC 64.090.

Opponents claimed that the term vicinity includes not only land within the City limits, but also land that is outside the City in the County UGB east of the property. Council rejects this interpretation as unreasonable. Opponents' interpretation would set a precedent that eviscerates the term "vicinity" of a proposed use, and replaces it with the term "in the City or the City's UGB." This is an unreasonable and incorrect interpretation of the term.[5] It is also relevant that the description of "vicinity" used in the analysis in this case is consistent with the description of

[4] Kuebler Blvd. currently carries more than 27,000 trips per day and is projected to carry 50,000 trips.

[5] Council notes that this issue is largely irrelevant as the record establishes that there is no commercially designated land in the UGB around south eastern I-5 – that is designated "Industrial." Accordingly, regardless of whether land in the UGB near south east I-5 is relevant, there is no suitable appropriately designated alternative sites for the proposed use in any case.

vicinity the City has affirmed in other cases. Including land within the UGB in the "vicinity" of a proposal is not consistent with previous City interpretations. For example, in the recently approved "Kale Road" decision (CPC/ZC 05-12), cited by opponents,, the "vicinity" was simply described as: "For purposes of this application, the vicinity was defined as the area extended to the UGB on the east and north, Silverton Road on the south and Interstate-5 on the west." (Kale Road staff report, page 9).

Opponents identified two parcels that they claimed were suitable alternative sites for the proposed use. One property is located at State Street and Cordon Road, in the northeast part of the Salem urban area (the "Picsweet Property"). The Pictsweet Property and Chemawa Property are not in the "vicinity" of, but rather are distant from, the Subject Property. These two properties would not be located close enough to serve the three neighborhoods north and south of Kuebler Boulevard, and east and west of Battle Creek Road or the SE Salem Kuebler Blvd. traffic. The Pictsweet Property is approximately five miles northeast of the Subject Property. The Chemawa Property is approximately eight miles from the Subject Property in North Salem. These sites are not within the scope of the term "vicinity" based on the dictionary definition of the term or any other reasonable definition of the term "vicinity."

The selected vicinity represents a logical geographical area for the proposed community commercial facility based on the existing and emerging residential growth in the area and key adjoining transportation corridors.[6]

Lack of Suitable Alternative Sites

The standard requires that there be a lack of Commercially designated, suitable alternative sites for the proposed use within the "vicinity" of the proposed use. In this standard, there are two alternative evaluation "factors" for making this suitability determination. Neither of the factors is stated as an approval standard, and both factors need not be evaluated. Rather one or both of the factors may be considered in determining whether an alternate site is "suitable" for the proposed use. They are alternative factors to consider in determining suitability. Those two alternative evaluation factors are SRC 64.090(1)(A) "Suitability of the size of the alternative sites to accommodate the proposed use;" or SRC 64.090(1)(B) "Location: Suitability of the location of the alternative sites to permit the proposed use." Both factors are relevant to this case. The record shows that in the selected vicinity there are no parcels of sufficient size (between 18 and 30 acres in size[7]) designated "Commercial" in the City plan, for the proposed use. Therefore, the record shows that in the selected vicinity considering the size of alternate sites, there is a lack of suitable alternative sites for the proposed use. Similarly, there are no suitably designed alternative sites in the vicinity for the proposed use that have the locational characteristic of being situated along Kuebler Blvd., with its high traffic counts.

[6] Council notes in the alternative only that the dispute about the "vicinity" does not change the result in this case regardless of the interpretation of that term, because no matter how big or small the "vicinity" is determined to be, there is no alternate, appropriately designated site for the proposed use, either in the City or the southeastern UGB.

[7] There are also no parcels between 15-30 acres in size designated Commercial in the vicinity.

As explained above, the Picsweet and Chemawa sites selected by the opponents are not appropriately designated for the proposed use.

A suitable alternative site must be able to accommodate the proposed use of up to 299,000 square feet of community commercial shopping and services. This means considering the "size" factor for suitability, a suitable alternative site must be composed of about 28 acres of land. However, if there were potential alternative sites between 15-30 acres those would have been reviewed, but there were no such sites in South Salem.

Opponents contend that the 10.0 acre abutting property which is a part of the site for the "proposed use" is by itself suitable and "appropriately designated" as an alternative site for the proposed use, if the proposed use is changed. Opponents do not dispute that the adjoining 10.0 acre site is too small for the proposed use sought by the Applicant – even if only 240,000 square feet is sought. In this regard, Council agrees that the 10.0 acre abutting property while Commercially designated is too small for the proposed use of a commercial facility of up to 299,000 square feet. Council interprets the term "proposed use" to be the use as proposed by the Applicant, not a use as suggested by others. Accordingly, Council determines the opponents' interpretation and desired application of this standard to include sites not suitable for the proposed use is incorrect. Moreover, this abutting 10.0 acre property is already included as a part of the site for the proposed use. It cannot accommodate the proposed use alone. Therefore, the abutting 10.0 acre site is not a suitable alternative because of its size.

Further, Council declines to set a precedent that any vacant site in the City is "suitable" for a "proposed use" by simply changing the proposed use to something other than that which is proposed. This is not what the standard says and is inconsistent with the text, context and policy of the Salem Revised Code. The opponents' interpretation would make the standard meaningless. Moreover, Council finds that to adopt such an interpretation of the City standard which focuses on the suitability for the proposed use, is an improper amendment by interpretation. *Goose Hollow Foothills League v. City of Portland*, 117 Or App 211, 218, 843 P2d 992 (1992) (to amend legislation de facto or to subvert its meaning in the guise of interpretation is not a permissible exercise); *Stahl v. Tillamook County*, 43 Or LUBA 518 (2003); *Loud v. City of Cottage Grove, 26 Or LUBA 152 (1993).* Consequently, Council finds that the City standard requires identification of alternative sites for the proposed use up to 299,000 GLA.

Summary

Based on the data and an examination of land currently designated "Commercial" on the SACP Plan map, Council finds that there is a lack of appropriately designated, suitable alternative sites within the vicinity for the Subject Property, based on size or location. This criterion is satisfied.

Criterion 3: The proposed plan change considers and accommodates as much as possible all applicable statewide planning goals; and

The following Statewide Planning Goals apply to the Applicant's proposal. The City finds that the proposed SACP minor plan change complies with all applicable statewide planning goals.

GOAL 1 – CITIZEN INVOLVEMENT

This application was reviewed according to the public review process established by the City. Notice of the proposal was provided to property owners and public agencies, published in the Statesman Journal, a newspaper of general circulation in the City, and posted on the Subject Property. The notice described the nature of the request and the applicable criteria. The Neighborhood Association in which the property is located (South Gateway) conducted seven meetings and as a result the Board provided comments to the City recommending approval of the Applicant's proposal. The Applicant conducted one meeting with the Morningside Neighborhood Association which neighborhood voted to recommend the proposal be denied. A public hearing to consider the request was held by the Planning Commission and three public hearings were conducted by Council.

Through the City notice and public hearing process all interested persons were afforded the opportunity to review the application, comment on the proposal, and participate in the public hearings. These procedures meet the requirements of this Goal for citizen involvement in the land use planning process.

Goal One alleges that the South Gateway Neighborhood Association meetings and resulting Board recommendations prejudiced their substantial rights because there is no neighborhood plan. There is nothing in the City's land use regulations that requires that a neighborhood plan be adopted. The process to adopt a neighborhood plans must be initiated by neighborhood organization. A neighborhood plan, if adopted, is merely a refinement of the SACP, and must be consistent with the SACP. Because neighborhood plans are not required under Salem's land use regulations, Goal One's "substantial rights" could not be prejudiced.

A neighborhood association provides valuable information to Council regardless of whether there is an adopted neighborhood plan. In making a decision on a quasi-judicial land use proceeding, the Council considers the recommendation of neighborhood boards; however, these recommendations must be considered along with any and all other evidence in the proceeding.

The Goal One Coalition also claims that the City has relied on "unacknowledged city reports and documents" and this causes a Statewide Planning Goal One problem. First, the allegation is mistaken to the extent it asserts that required adopted plans or inventories are ignored. All relevant adopted plans and inventories have been applied in determining compliance with relevant standards. Second, all parties had an opportunity to submit and respond to evidence submitted into the record. To the extent that some of that evidence includes evidence submitted by parties to the case that was submitted in another proceeding, all parties had an opportunity to review and respond to all such evidence. Council notes that no document considered as evidence in the record has been transmorgrified as a mandatory standard or to supply a mandatory policy or mandatory guidance. All submitted evidence has an equal footing as evidence submitted into the record. Third, Council is uncertain how this issue applies to Goal 1 compliance. The City has provided numerous opportunities for all interested persons to participate in the public processes including complying with the City's acknowledged ordinances governing public participation. Council finds that this decision complies with Goal 1.

GOAL 2 – LAND USE PLANNING

The SACP is acknowledged to be in compliance with the Statewide Planning Goals. This proposal is made under the goals, policies and procedures of the SACP and its implementing ordinances, as well as the Statewide Planning Goals. A description of the proposal in relation to the methodology and intent of the SACP, its applicable goals and policies, the comprehensive plan change criteria, the zone change criteria, and the Statewide Planning Goals, is addressed by the applicant's submittals and the City's corresponding staff report. Facts and evidence have been provided to support and justify the proposed Comprehensive Plan Change. For these reasons, the proposal conforms to the land use planning process established by this Goal.

The Goal One Coalition argues the determination that the proposed use is a community shopping facility is not consistent with "information or policies in the SACP" and is a violation of Goal 2. Council is not clear on what basis the Goal One Coalition claims a violation. If they are arguing the proposal for a 240,000 square foot of gross leasable area of shopping center on the subject 18.4 acres or up to 299,000 square feet of GLA on the totality of the combined Subject Property and Abutting Property can never be a community level center, they are mistaken. City Council Resolution 87-136 adopted November 9, 1987, defines the terms "regional retail and employment center" and "regional commercial or retail center" to include among other things a development including "300,000 square feet, or more, of gross leasable space." Because the proposal is for less than 300,000 square feet of gross leasable space and a specific condition of approval is included in this decision to assure that this limitation is observed. This is support for and evidence that the proposal is for a community, not "regional" center. The analysis under SRC 64.090(1) that the proposal is for a "Community" facility is incorporated herein. Moreover, to the extent the issue has to do with the opponents' speculation about an "outlet" mall, the applicant specifically represented and Council specifically relies on the Applicant's representation, that the property will not be developed with a "Factory Outlet" mall. The evidence in the record supports Council's determination that the proposal is for a community level shopping and service facility.

The Goal One Coalition also argues that the staff reports relied on unadopted plans for compliance with applicable standards. Council does not rely on unadopted plans as approval standards or as mandatory policy or other statements. The City's EOA was supplied as evidence in the record as factual evidence on a relevant point about commercial sites in the city. This document was not relied on as an approval standard or as supplying mandatory standards or benchmarks which must be applied. It was submitted and considered as evidence in the record on a particular point. It was not the only evidence on the point and the decision herein could stand without it. Council relies on adopted plans as the approval standards guiding this decision and that this decision is based on an application of adopted plans. All required determinations of compliance with relevant standards are supported by substantial evidence in the record.

GOAL 6 – AIR, WATER AND LAND RESOURCES QUALITY

The Subject Property is within the City, where development at an urban scale and density is intended. The effects of using the Subject Property for commercial retail, service/ office activity

on air, water and land resources will be similar to those of other similar commercial activities in the City. The effects of urban development are anticipated on lands that are within the city.

The major impact to air quality in the vicinity is vehicle traffic along Kuebler Boulevard and I-5, which are the major traffic routes in the area. Kuebler Boulevard is designated as a Parkway in the Salem Transportation System Plan (STSP), which is defined as an arterial designed to carry 30,000 to 60,000 vehicles per day. I-5 is a Freeway, with a design capacity of 50,000+ vehicles per day. Under the "worst case" traffic impact scenario for development of the Subject Property, as described in the Applicant's TIA, the Subject Property could generate 10,820 net new trips per day. Under its current zoning, the Subject Property could generate an estimated 4,575 net new trips per day. The net increase over these two development scenarios is 6,245 vehicles per day. ("Pass-by" traffic, which is those vehicles that are already on the street, is expected to make up about a third of the estimated total traffic volume.) New traffic generated by the Applicant's proposed use will be a part of the exceptionally high volume traffic that is already in this area.

The proposed use itself will not create a significant air quality impact. Also, part of the traffic generated by commercial uses on the site will be in place of traffic that would otherwise have to travel to similar services located elsewhere, and at greater distance; therefore any impact to air quality will simply be relocated and will not compound air quality problems, at the worst. There is a reasonable expectation that the proposed use will comply with state and federal environmental standards that it must satisfy in order to be built. However, there are no state or federal air quality standards that will be required to be satisfied in order for the proposed use to be built. Nevertheless, Council finds that there are no additional impacts to air quality from the proposed use. *See Friends of the Applegate v. Josephine County*, 44 Or LUBA 786 (2003).

Further, Council finds that the proposal supplies a walkable or bikeable destination for a significant number of occupants of the residential developments in the vicinity served as well as significant pass-by trips from vehicles on Kuebler Blvd. stopping as a part of a trip they otherwise have to make. Council finds that this opportunity for people residing in the vicinity to have a nearby community facility as proposed supplies a significant incentive to use alternate modes of transportation for medical services, shopping, restaurants and services than otherwise exists in the vicinity. To the extent that even a few people would walk or bike instead of drive for a cup of coffee with friends or for a doctor appointment, the proposal has a reasonable chance to reduce impacts to air quality from what otherwise would be a car trip.

The Subject Property will be provided with City sewer and water services. The City maintains a sewage treatment system and is responsible for assuring that wastewater discharges are processed to meet the applicable standards for environmental quality. Through the use of these facilities there will be no withdrawals of groundwater, or discharges of waste water directly to a water body. The site will be provided with a storm water detention and drainage system as specified by the City's adopted design and engineering standards.

The Subject Property is primarily a vacant field. There are no identified significant natural resources on the Subject Property. Development of vacant urban land is expected. The proposed change will have no significant negative impact on the quality of the land.

Considering the location of the Subject Property within the City, the availability of public facilities to provide water, sewage disposal and storm drainage services, and the surrounding transportation system, the proposal will have no significant impacts to the quality of the air, water or land.

GOAL 9 – ECONOMY OF THE STATE

The proposed change to the Comprehensive Plan Map is to redesignate 18.4 acres from "Developing Residential" to "Commercial," for the purpose of providing a site for a community level retail and service center. The proposal increases economic opportunities for Salem citizens. As such the proposal is consistent with Goal 9's requirement to provide a variety of economic opportunities for Salem area citizens, including commercial opportunities (OAR 660-009-0000). Further, given the evidence in the record that there are no other Commercially designated properties even between the 15-30 minimally required for a community center in the selected vicinity of the Subject Property suitable for the proposed use, the proposal is consistent with Goal 9's requirement to provide a variety of economic opportunities for Salem area citizens, including commercial opportunities (OAR 660-009-0000). Moreover, the record establishes that in the absence of the proposal or something like it, the costs of supplying infrastructure in the area are so high that a single commercial use like a medical office cannot establish a new office on the abutting 10-acre property and provide commercial medical services to Salem citizens in south and southeast Salem. This is why the Abutting Property has remained vacant since it was designated Commercial several years ago. The record establishes that south Salem lacks appropriate levels of medical services. The proposal will enable that important commercial service to be established

Goal 9 does not require an economic opportunities analysis (EOA) to support the proposed minor plan change and zone change, because the proposal changes the SACP plan map from a "Residential" to a "Commercial" designation. Rather, the requirement for an EOA *only* applies where property is proposed to be changed from a commercial or industrial designation or zone to a noncommercial or industrial designation or zone. OAR 660-009-0010(4). Neither is the case here where the proposal is to change from Developing Residential to Commercial. No EOA requirement is triggered and none is relied upon. There is an EOA from another case (CPC/ZC 05-12) that provides support for the concern that the City lacks commercial sites for the proposed use. It is probative to that extent.

Opponents of the proposal argue that there is no showing that there is a public need for the proposal and they cite this EOA from CPC/ZC 05-12. However, as explained above, there is no requirement that the applicant prove that there is a public need for the proposal. These opponents also argue that the EOA from CPC/ZC 05-12 cannot be relied on. The Council has considered it as evidence as requested by the parties, but it has not relied on the EOA as an adopted plan or mandatory guidance document. Their point concerning Goal 9 is a difficult one to discern in light of these inconsistent arguments that they make, in any case.

GOAL 10 – HOUSING

The Subject Property was annexed to the City in November 2001. It was annexed as residentially designated land and zoned RA (Residential Agriculture) which is a single family residential district. The explanatory statement in the voter pamphlet stated that "the petitioner for annexation indicates, however, that the future development of the land would be for commercial uses."

The City has an adopted housing inventory developed as a part of periodic review. As established in the City's periodic review submittal dated October 25, 2001 and approved by DLCD on November 23, 2001, the City's housing inventory is composed of existing SFR residential zoned lands, and the additional lands identified in Ordinances 60-200, 16-99, 93-98, 92-98. With these documents the City's planning actions included "sufficient land to meet twenty-year housing needs" and "are sufficient to meet the State Planning Goal 10 housing needs."

The Periodic Review order and its attached submittals establish that there are additional housing strategies and lands that were not included in the inventory, assuring an adequate supply of housing for the city over the 20-year planning horizon. These include plan amendments and zone changes for the former Fairview Training Center which at the time was planned and zoned for institutional use, which is now planned and zoned for at least 1,000 dwelling units. Furthermore, as explained in the 1997 Residential Lands Inventory (RLS) included as a part of the findings supporting Ordinance Bill Nos. 92-98 and 93-98, the Salem Area Comprehensive Plan designates adequate land for single family residential needs for the 20-year planning horizon apart from these actions (1997 RLS p. 10).

The Subject Property is currently designated Developing Residential, which establishes future development for single-family housing. Redesignating the Subject Property as Commercial will remove the land from the single-family housing inventory. The site totals 18.4 acres, and represents just 0.17% (.0017) of the land in the single family residential land inventory.

The Subject Property is vacant land except for one single-family house, which results in a current housing density of one unit per 18.4 acres. This is far below an urban residential density, and the Subject Property is not an existing significant source of housing. The minimum lot size for single-family residential lots in the City is 4,000 square feet, which could provide for a density of 9.25 homes per net acre (43,560 s.f.-15%÷4,000 s.f.). SACP Part IV.B., General Development, Policy 7 states an average residential density goal of 6.5 units per gross acre. As currently designated, using an average density of 6.5 homes per acre, the Subject Property would provide for just under 120 single family homes.

According to the Mid-Willamette Valley Council of Governments (MVWCOG) 1994 housing forecast for the Salem/Keizer UGB, which was included as Table 5 in the 1998 City of Salem Data Report to the SACP, a total of 68,760 single-family homes would be needed in the combined Salem/Keizer UGB by the year 2015. The number of homes needed for Salem or Keizer individually was not provided. Therefore, according to these figures, the inventory of vacant land for single-family homes that existed in the Salem UGB in 1997 could provide for 3,337 more single family homes than required by the housing forecast for the entire urban area.

A reduction of 120 homes would still provide for 3,217 more homes than required by the forecast.

Other records were consulted to determine whether the proposal would have an adverse effect on the City's continued compliance with Goal 10. City and County records show the subdivisions approved from 1998 to 2006 have created 5,280 single-family lots. Using the 1994 MVWCOG forecast for 2015 housing needs (combined Salem/Keizer UGB), the remaining number of needed single-family homes is 63,489 (68,769-5,280). At a density of six units per acre, the remaining vacant acreage (10,797.5) could provide for an additional 64,785 homes, which are 1,296 more than the forecasted need. A reduction of 120 homes would still provide for 1,176 more homes than required by the forecast.

At issue in the Kale Street case (CPC/ZC 05-12) the opponents cite, is an application for "large scale mixed density residential development" (Opponents' December 5, 2006 Exhibit 6 p. 9). The plan amendment criteria for "lack of appropriately designated suitable sites within the vicinity of the subject property" required the Kale Street applicant to find land in the "vicinity" (within which the subject PacTrust property is not located) that was appropriately designated for "large scale mixed density residential" use. *Id.*

In the Kale Street project's selected vicinity, the applicant there found there was no such appropriately designated suitable land for that particular "large scale mixed density" use and the City agreed. Because "large scale mixed density residential" use is what the Kale Street application proposed and the adopted findings approved, this means the City decided that in the vicinity of that proposal, there was a lack of suitably designated lands for that use. The size of the proposed use meant that parcels of less than 20 acres were rejected as too small. *Id.*

The Subject Property is 18.4 acres, and therefore not "suitable" by size or location for the use proposed by the Kale Street application. Thus, even if the Subject Property has been in the Kale Street property's vicinity, it would have been rejected as too small "for the proposed use." Therefore, the Subject Property is not "appropriately designated suitable land" for "large scale mixed density residential development" under the applicable City standard. In other words, the Kale Street case does not stand for the idea that there is a City wide need for a certain type of land for housing. Rather, it only stands for the idea that the City lacked in the vicinity of that land suitably designated alternative sites for the use that the Kale Street developer was proposing, considering size or location.

Further, explained in other findings supporting this decision, the terms "need" and "lack of" do not express the same legal standard *(see Salem Golf Club, supra).* Second, the Subject Property is zoned for Single Family Residential use, not the mixed residential type of use that the Kale Street application sought.

There have been other recent additions to the City's housing inventory including CPC/ZC 05-4, Santiam Village, which added 9 acres of RS zoned land and 38 lots, and the Sustainable Fairview project, which is planned to add at least 1000 units and at last count in the record for this case, approximately 1,686 residential units, both of which are estimates from approved plan amendments. These recent additions to the single family residential inventory via quasi-judicial

plan amendments reinforces the information in the City's adopted inventory that the proposal does not adversely impact the City's ability to supply single family residential housing to its citizens.

Based on the available data, without the Subject Property being designated residential and zoned RA, the inventory of land for housing within the City and UGB remains adequate to meet the projected need for housing.

GOAL 11 - PUBLIC FACILITIES AND SERVICES

The City maintains an infrastructure of public facilities and services to support urban development. The existing public services and facilities in the area, and those required to serve commercial uses on the Subject Property can be made available to the Subject Property at adequate levels to provide for commercial uses. The City will determine the appropriate service levels, in keeping with adopted design standards and engineering practices, when development permits are requested as a part of the required Urban Growth Area Development Permit, pursuant to SRC Chapter 66. The facility extensions necessary to serve development on the Subject Property are required to be provided by the developer at the time of development, according to adopted City requirements and this decision. In this manner the provision of services and facilities will be timely, orderly and efficient. By providing adequate levels of public services and facilities for the proposed use, the requirements of this Goal are met.

GOAL 12 – TRANSPORTATION

The subject site is located along Kuebler Boulevard, Battle Creek Road SE, 27th Avenue SE, and Boone Road SE. Kuebler Boulevard is classified as a Parkway, Battle Creek is a Minor Arterial, 27th is a Collector, and Boone Road is a Collector, according to the Salem Transportation System Plan (TSP).

The relationship of the proposal to the transportation system and its impacts have been established in the Traffic Impact Analysis prepared by Kittelson and Associates, "PacTrust Kuebler Project," September 2006, and a supplemental traffic impact analysis entitled "*November 14, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA" (collectively "the TIA).* The TIA examines the proposal according to the requirements of the Transportation Planning Rule (TPR), OAR 660-012-0060 et seq. The TIA is consistent with the Highway Capacity Manual and City of Salem traffic operation standards from the City's TIA Guidelines. *See* TIA pp 14.

Traffic volumes for the TIA were collected in a manner that is consistent with ODOT and City standards. ODOT's concurrence letter states: "The TIS in its current form is acceptable as it is consistent with the requirements of the ODOT Analysis Procedures Manual (APM) dated April 2006. The APM is the ODOT 'standard' for evaluating such documents" (ODOT November 14, 2006 Letter from Daniel Fricke to Michael Cerbone). Goal 12 compliance is established through compliance with the state Transportation Planning Rule (TPR). Such compliance is explained below.

The applicant's traffic engineer further supplied the following additional reports: December 4, 2006 memo - Response to Public Comments from the November 21 Public Hearing; December 19, 2006 memo - Supplemental to the September 2006 PacTrust Kuebler Project TIA; June 1, 2007, Response to City Council Traffic Related Questions; June 6, 2007 Response to Mr. John Miller Traffic Related Questions; June 25, 2007 Response to Public Comments from the June 11 Public Hearing; June 25, 2007 Response to DKS Associates Traffic Count Updates.

The proposed minor plan change satisfies the requirements of Goal 12 and its implementing requirements in the TPR. Both ODOT and City transportation staff have established their concurrence in this regard. The TIA is complete, accurate and transparent. ODOT's concurrence is established in the agency's November 14, 2006 letter from Daniel Fricke (ODOT) to Mike Cerbone (City of Salem). The City of Salem's concurrence is established in the November 13, 2006 report from Eric Destival, Assistant City Traffic Engineer.

At build out estimated to be in 2009, the transportation system will function consistently with all performance level of service standards, and none of the adverse consequences listed in OAR 660-0012-0060(1)(a-c) will occur *(see* Kittelson May 7, 2007 Memorandum). At present, the system currently fails. Therefore, the proposal and its required mitigation efforts will improve the transportation system adequately mitigating its own impacts to enable and establish Goal 12 and TPR compliance. Also, Council finds that the evidence in the record establishes that in the long term (20 year) scenario, the transportation system will not be further degraded by the proposal *(see* September 2006 PacTrust Kuebler Project TIA pp. 42-45). These two elements are the TPR requisites and both are met here.

The TPR

OAR 660-012-0060(1) states:

> Where an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility, the local government shall put in place measures as provided in section (2) of this rule to assure that allowed land uses are consistent with the identified function, capacity, and performance standards (e.g., level of service, volume to capacity ratio, etc.) of the facility.

"Significant affect" is defined in OAR 660-0012-0060(1(a)-(c). 660-012-0060(1)(a)-(c) determines that a proposal has a significant affect if it will:

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);
(b) Change standards implementing a functional classification system; or
(c) As measured at the end of the planning period identified in the adopted transportation system plan:
    (A) Allow land uses or levels of development that would result in types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;

(B) Reduce the performance of an existing or planned transportation facility below the minimum acceptable performance standard identified in the TSP or comprehensive plan; or

(C) Worsen the performance of an existing or planned transportation facility that is otherwise projected to perform below the minimum acceptable performance standard identified in the TSP or comprehensive plan.

The TSP identifies the planning period as 2020. *See* TSP p 1-1. The applicant's TIA evaluates the transportation system for a planning horizon longer than the TSP. In this regard, the applicant's TIA is conservative as it analyzes impacts to the transportation system from all sources through 2025 *(see* September 2006 TIA p. 20, 38).

Moreover, the proposed minor plan change will not require or result in any changes to the functional classification of any transportation facilities in the vicinity of the site or the standards that implement the functional classification system (OAR 660-0012-0060(1(a-b) at the time of opening or planning horizon year *(see* TIA p. 44).

The proposed minor plan change ensures that at the time of opening (estimated in 2009), none of the adverse consequences listed in OAR 660-0012-0060(1)(a)-(c) will occur. The proposal also ensures that none of the adverse consequences listed in OAR 660-0012-0060(1)(a)-(c)(A) or (B) will occur in the planning horizon year under the plan amendment or existing zoning if the plan amendment did not occur. In the year 2025, the system is anticipated to fall below the performance standards of the type listed in OAR 660-0012-0060(1)(c)(C) with or without the proposed plan amendment and zone change. Here, however, Council finds that the evidence in the record establishes that the project is mitigated such that the impacts on the performance standards for the transportation system are the same in the 2025 horizon as would occur under existing zoning. In other words, the applicant as conditioned in this decision, under the TIA, will put measures in place such that at the end of the 2025 planning horizon it has mitigated all of its impacts from the proposed plan amendment in a manner that the plan amendment does not cause any of the adverse consequences to the transportation system listed in OAR 660-0012-0060(1)(a)-(c), including (c)(A)–(C).

The applicant's TIA and the required transportation improvements to mitigate the traffic impact of the proposed Comprehensive Plan designation change rely on and assume that certain City funded improvements to the north side of Kuebler Boulevard will be completed. These improvements are referred to as the "Funded Transportation Improvements" in the applicant's September 2006 TIA, page 39. It is necessary for all transportation improvements, the applicant's and the City's, to be completed prior to occupancy of the subject property to assure the proposal will not have an significant effect on the transportation system.

Accordingly, OAR 660-0012-0060(1) and (2) are met.

In the alternative only and without waiver of the above, Council further notes that the TPR at OAR 660-0012-0060(3) authorizes a determination of compliance with Goal 12/TPR OAR 660-0012-0060(1) where:

(a) The facility is already performing below the minimum acceptable performance standard identified in the TSP or comprehensive plan on the date the amendment application is submitted.

Under existing zoning conditions, the transportation system is already failing. This is clear from the record including the TIA and supplemental traffic information from the Applicant's engineer and the City's engineer. The transportation system will fall below applicable performance standards in 2025 regardless of the proposal and regardless of planned infrastructure improvements. Under the proposal, however, the Applicant will as conditioned ensure that the system functions the same as it would under existing zoning. In these circumstances the plan amendment meets TPR requirements if it is established that:

> Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures.

Council determines that the City and Applicant's traffic engineer have established that at the date of opening – estimated in 2009 (*see* Kittelson Supplemental Memoranda dated May 7 and June 6, 2007) the proposal will not have a significant effect on area transportation systems so long as the applicant adheres to mitigation strategies outlined in the TIA and in the conditions of approval to this decision. Moreover, the proposal does not further degrade the performance of the transportation system in the year 2025.

In this regard, the proposal meets the terms of OAR 660-012-060(3)(e). Therefore, OAR 660-0012-0060(3)(a)-(d) need not be applied.

ODOT responded to the TIA explaining it was adequate and correctly prepared, but chose to supply no comment on the elements contained in OAR 660-0012-0060 (3)(e).

Under these circumstances as the rule states:

> If a local government provides the appropriate ODOT regional office with written notice of a proposed amendment in a manner that provides ODOT reasonable opportunity to submit a written statement into the record of the local government proceeding, and ODOT does not provide a written statement, *then the local government may proceed with applying subsections (a) through (d) of this section.* (Emphasis supplied.)

Accordingly under OAR 660-0012-0060(3):

> [The City] may approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility.

Thus, under either OAR 660-0012-0060 (3) or (3)(a)-(e), the proposed use complies with Goal 12 and the TPR. Council finds that the most credible evidence in the record is that while the proposal if unmitigated has a significant affect as defined, that with the improvements in place as set forth in the applicant's TIA and the conditions appended to this decision, at the time of the likely opening of the proposed shopping center and medical offices, the proposal will be adequately mitigated to avoid having a "significant affect" on the area transportation facilities as required in OAR 660-0012-0060(1).

Council further finds the proposal complies with Goal 12 and the TPR in the 2025 horizon because the transportation system has been established to be mitigated, based on the improvements required by this decision as conditions of approval and the City funded improvements, such that it will not fail any worse than it would if the property were developed as Residential land rather than as Commercial land. Council also finds that ODOT was given the appropriate notice as required by OAR 660- 0012-0060(3)(e) and did not supply the comment specified in OAR 660-0012-0060(3)(e). ODOT stated its concurrence in the applicant's TIA including the methods it used. Under these circumstances, Council is free to approve the proposal as provided in OAR 660-0012-0060(3) and (3)(e).

The opponents raised an objection to the age of applicant's traffic counts. The applicant's traffic counts were collected in July 2005 and the final TIA was prepared in September 2006. As such, the applicant's traffic counts are not stale and are well within the City's guideline that counts used in a TIA should not be more than two (2) years old (Kittelson December 19, 2006 letter Attachment D). This reference in the City guideline regarding the age of counts refers to the age of traffic counts taken in relation to the date of the TIA, not in relation to the date of Council's decision. Accordingly, Council finds the Applicant's traffic counts are not stale and are appropriate to use as a foundation for analysis. Moreover, the Applicant did a "sensitivity check" as explained in its June 6, 2007 analysis regarding its counts and explained:

> As a supplemental sensitivity check, additional traffic volumes at each study intersection were collected in March 2007. These base volumes were compared to the 2005 base volumes, and found to have an overall increase in traffic volume that is slightly lower than the 2007 background volumes from the September 2006 TIA. This comparison suggests that the methodology and assumptions used to determine background traffic in the TIA are valid and conservative.

Council finds the Applicant's traffic counts to be the more credible and persuasive evidence in the record. This is supported by the City's professional engineering staff. *See* City Staff June 18, 2007 analysis.

Council finds that traffic counts are designed to determine the peak hour, typically the p.m. peak hour. Accordingly, whether school is in session is irrelevant as the weekday p.m. peak hours (5:00 -6:30 p.m.) is a time when school is not in session (Kittelson December 4, 2006 p. 2). "[A]lthough many schools are not in session during the summer months, the traffic analysis analyzed peak time periods when schools are not typically in operation or their traffic flows are not at their peaks (weekday p.m. peak hours and Saturday midday peak hours)" (Kittelson, December 4, 2006 letter).

The Applicant's traffic counts were not taken at an unrepresentative time of year. Rather, Council finds that the Applicant's July 14, 2005 Thursday traffic count was taken on a day that was higher than average traffic days as confirmed by ODOT traffic counters in the area *(see* Kittelson December 19, 2006 analysis, page 2 and Appendix E; Kittelson November 14, 2005 letter p. 10). Thus, the Applicant's counts have the benefit of corroborating ODOT traffic counter information establishing they are actually high, if anything, and not low.

Further, Council finds more credible the evidence in the record that traffic counts should be taken at representative days of the week and not on Mondays or Fridays (see ODOT APM Manual; Kittelson Letter December 19, 2006 page 2). In this regard, ODOT's APM manual states: "It is common to avoid Monday and Friday counts when weekday data is desired, as the trip characteristics on these days generally differ from the remainder of the week" *(see* Kittelson December 19, 2006 Letter p. 2; City Staff memorandum June 18, 2007).

Council finds that the traffic counts for the proposal were taken by a respected firm on a Thursday in July 2005 consistent with sound engineering practice (Kittelson December 19, 2006 page 2; September 2006 TIA page 14, Appendix B). ODOT, the City and opponents' traffic engineer were all given the courtesy of an opportunity to review the traffic volumes and supply comment and objection in advance of the final TIA. All of the above indicated their agreement that the traffic volumes were appropriate and the City confirmed that agreement with others in an e-mail dated August 9, 2006 from Eric Destival to DKS (the opponents' engineer) among others.

Further, the opponent's traffic counts were taken on a Friday, the week after Thanksgiving. Council finds those counts to be less reliable than the Applicant's counts which Applicant counts were taken at times and in a manner consistent with sound engineering practice. The weekend of the opponent's counts is known by Council to be one of the busiest traffic days of the year and this is supported by evidence in the record *(see* Kittelson December 19, 2006 letter page 2, *and also* City Staff Memorandum dated June 18, 2007). The ODOT APM manual states: "In general, days potentially influenced by state or federal holidays or other significant events that may alter normal traffic patterns should be avoided." The opponents' engineer applied no seasonal adjustment for his counts at a seasonably busy time of year as would be consistent with sound engineering practice (Kittelson December 4, 2006 letter page 2 and *also* Kittelson December 19, 2006 page 2). Council finds these opposing counts to be less persuasive and rejects them.

Further, opponents' counts that were taken in March 2007 do not undermine the counts underlying the applicant's TIA. As explained in the Applicant's July 25, 2007 Kittelson submittal, the opponents' March 2007 counts' base volumes were compared to the Applicant's 2005 base volumes and found to have an overall increase in traffic volume that is consistent with the Applicant's forecast 2007 background volumes from the September 2006 TIA. This comparison does not undermine, but rather supplies some confirmation that, the methodology and assumptions used to determine background traffic in the TIA are valid and accurate. Therefore, opponents' March 2007 counts are in conformity with the counts that were predicted by the Applicant using the Applicant's July 2005 counts that were analyzed in the September 2006 TIA.

The opponents' March 2007 counts show one deviation from the counts relied on in the applicant's TIA. This deviation is that there are more counts at the Boone Road/Battle Creek Road intersection than the two (2) percent growth rate used in the TIA would predict. Council finds persuasive, however, the applicant's explanation that this is because Kuebler Boulevard currently functions at a failing LOS and the March 2007 counts very likely represents substantial cut-through traffic currently utilizing Boone Road and 27th Avenue. Council finds that this cut-through traffic pattern is very likely to continue in the absence of the project improvements required in this decision and the transportation improvements that will be provided by the City in the area. Council finds persuasive and credible that if the transportation improvements required by this decision in concert with other improvements in the area occur, the traffic system will function appropriately and adequately as outlined in the applicant's TIA.

Council further finds that the applicant's TIA meets the TPR standard requiring that "allowable" uses be analyzed because the proposal is specifically limited by conditions of approval in this decision. In this regard, the proposal is limited to a 299,000 GLA of retail shopping center/services (medical offices) on the totality of the 28 acres or 240,000 GLA of retail shopping center space over the subject 18.4 acres. Allowable uses have been properly considered and analyzed.

In addition to the specific square footage and use condition of approval, Council also finds that the use of a "reasonable worst case" analysis for determining allowable uses in the TIA is proper. Moreover, Council finds that the "reasonable worst case" of allowable uses selected in the TIA was reasonable within the meaning of the TPR, notwithstanding that Council limited the size of the project by conditions of approval provided in this decision. The TIA for the proposed 18.4 acre plan amendment to which the TPR applies is conservative. It evaluated a shopping center and office complex proposal over a 28-acre property rather than just the Subject 18.4 acre property. This was in response to the Applicant's stated intention to develop the subject property and the Abutting Property concurrently. Further, the TIA evaluated a larger shopping facility than was ultimately proposed by the Applicant and allowed by the conditions of approval to this decision. The TIA thus likely overstates trips, rather than understates them and serves as a highly conservative analysis which is well within the meaning of the terms "reasonable worst case" analysis. Given the Applicant's clearly stated intentions in the application and hearing process, as well as the conditions imposed in this decision, it is reasonable to assume for purposes of the TIA that the proposal is for a community level retail shopping and service center as described in the Applicant's submittals and as limited in this decision. Additionally, both ODOT and the City's professional staff concurred in the scope of the TIA. Finally, the statement from the opponents that there is a report from a person posted on the "Against the Wal" website that stores having more than 200,000 square feet should show a greater traffic impact is rejected. First, it is irrelevant as the proposal is not for a Wal-Mart, as the applicant has so represented and Council has relied on that representation. Second, Council specifically finds more credible the evidence in the record from the Applicant, the City's professional staff and the final ODOT letter of approval of the TIA that the TIA's traffic estimate is appropriate for a determination of the traffic from the "allowed uses" of the property.

The scope of the TIA is adequate and complies with Goal 12.

Further, Council finds it persuasive and credible that ODOT manuals regarding TPR compliance and regarding preparing TIAs look to a "reasonable worst case" analysis for preparation of a TIA that complies with OAR 660-0012-0060, as follows:

> ODOT 2005 Development Review Guidelines
> Chapter 3 – Section 3
>
> *In the case of a local land use proposal where specific uses have not been identified, a reasonable worst-case land use should be assumed based on the uses allowed outright under the current or requested zoning.*
>
> ODOT 2005 Development Review Guidelines
> Appendix 7 – TIS/TIA
> Appendix 7-10
>
> 4. Transportation Planning Rule OAR 660-012-0060 Compliance Analysis for Zone Changes or Comprehensive Plan Amendments must address the following:
>
> *It is particularly important that the applicant's transportation engineer provide ODOT the opportunity to review and concur with the mix of land uses and square footage they propose to use for the "reasonable worst case" traffic analysis for both existing and proposed zoning prior to commencing the traffic analysis.*

Therefore, the TIA assumption regarding allowed uses including square footage is appropriate; although as noted, Council has reduced the amount of allowable square footage and gross leasable area in this decision in response to comments received in the proceedings. Council further notes that the mitigation recommended in the TIA is required in its entirety with certain additions provided in this decision, notwithstanding that the total gross leasable area for the project is reduced in this decision below what the Applicant originally requested.

Based on the above, it is apparent that the TIA likely overstates rather than understates trips. This is because the TIA analyzes the same use categories under the Trip Generation manual, but for a greater square footage of gross leasable area than Council allowed in this decision. According to the TIA, the predicted traffic generated by the combined Pac Trust and Salem Clinic property under existing circumstances considering the existing RA and CO zoning is 4,575 trips. If the 18.4 acre property is designated Commercial and rezoned to CR as proposed, then the 18.4 acres, zoned CR, together with the existing Salem Clinic property assuming CO zoning for the entire 10 acres, will generate 9,660 trips. Thus, Council finds the proposal will add 5,085 net new trips over the predicted trips for the existing RA zoning. Kittelson September 2006 TIA p 24-25. The conditions of approval allow the Applicant to adequately mitigate for these 5,085 trips and for existing deficiencies so that at the time of opening the proposed shopping center, the area transportation systems function adequately.

Council also finds that the applicant's TIA is transparent and a reviewer can easily determine the ITE land use categories relied upon by the traffic engineer to determine predicted trips associated with the particular land uses. As a result, Council finds the TIA complete, adequate and reliable.

There was testimony during the hearings that objected to a lack of long term queuing analysis in the over saturated conditions of 2025. Council finds that in 2025, area traffic conditions will be over saturated regardless of the proposal or if the existing zoning is maintained. Council finds persuasive that sound engineering practice does not attempt a queuing analysis in over saturated conditions and that it would be unhelpful to do so here. Council finds credible the applicant's engineer's expert opinion that a queuing analysis would not provide probative evidence of long term queues in the over saturated conditions of 2025. This is because queuing characteristics are sensitive to factors such as vehicle arrival patterns and detailed settings within the signal controller, neither of which can be accurately predicted 20 years hence for a series of oversaturated signalized intersections (Kittelson letter December 19, 2006 p. 3). Accordingly, the absence of a queuing analysis in 2025 conditions outlined in the expert reports in the record does not affect any relevant standard in this case.

There was controversy about the impact of the proposal on the Boone Road Collector Street status. Council finds that under the PacTrust proposal, the average vehicle trips per day (ADT) levels under 2007 build-out conditions (now 2009) along all segments of Boone Road and 27th Avenue are forecast below 10,000 (ADT); within the guidelines for a Collector . Council notes that it has approved the right-in from Kuebler Boulevard and that this further reduces the ADT on Boone Road.

As noted above, under the TPR OAR 660-0012-0060(3), the proposal may be approved consistent with the requirements of Goal 12 and the TPR so long as the system functions adequately at the time of opening (2009) so that at that point the "significant affect" impacts are adequately mitigated. This is the case here. Further, Council notes that under long-term 2025 conditions, the forecast ADT along Boone Road between Battle Creek Road and the proposed Boone Road site driveway (estimated 10,650 ADT) and along 27th Avenue between Kuebler Boulevard and the proposed 27th Avenue site driveway (estimated 10,800 ADT) are estimated near the design guideline of 10,000 ADT. Council finds that the design guidelines are not inflexible standards but rather guidelines which operate as rules of thumb. Being within an estimated 800 ADT of the design guideline in 2025 conditions does not change the functional classification of Boone Road: it will maintain its functional classification notwithstanding it is within its functional classification range. Council finds that the 2025 estimated ADT of 10,800 is within the allowable sphere of the Collector street guideline. There is no standard that is violated by approving access to Boone Road. Further, the proposal is to develop the Subject Property jointly with the Abutting Property. The Abutting Property already has a commercial access to Boone Road which will be shared with the shopping center proposed use.

Council also notes that even in the 2025 conditions, the forecast ADT along Boone Road and 27th Avenue between the proposed site driveways (*i.e.*, roadway segments that fronts the existing residential neighborhood) is forecast to be less than 6,000 ADT *(see* Kittelson, December 19, 2006 letter p. 2-3). This further support's Council's view that the proposal's Boone Road trips are within the ADT guideline, as applied here.

The trips along Boone Road and 27th Avenue are further minimized by the condition of approval requiring the Kuebler Boulevard right-in access. There was concern expressed in the

proceedings that the City lacked authority to authorize an access from Kuebler. Council disagrees that it lacks authority to authorize the right in access from Kuebler into the project area.

The City's guidance documents make clear that the City has the power to authorize access to Kuebler Boulevard. In this regard, the City standards provide:

> **PARKWAY**
>
> **Access**
>
> Access spacing along Parkways shall be limited to one-mile intervals for Arterial or Collector Street intersections and/or major intersections. A spacing of less than one-mile will only be granted on approval of the Public Works Director.
>
> **Permitted Access Uses**
>
> Uses permitted direct access are limited to major public and/or private developments generating traffic volumes of 10,000 or more vehicles per day (Public Works January 11, 2000 Development Bulletin #34 p 1, Kittelson November 14, 2006 Letter App G.) (Emphasis supplied.)

The proposal will generate a total traffic volume of 14,270 vehicles per day (although it will only add 5,085 net new trips to the system over what would be added if the property were developed as it is now planned and zoned) *(see* Kittelson November 14, 2006 letter page 12 and Appendix F, *see also* September 2006 TIA page 25). The proposal meets the test for the required limited Kuebler access. The City has the discretion to authorize right-in only access to Kuebler Boulevard as proposed and the City's Public Works Department has recommended approval of the same[8] *(see* City Public Works letter from Eric Destival to Anthony Yi, dated November 13, 2006). Council finds the right-in access from Kuebler Boulevard is reasonable and an appropriate requirement to minimize traffic impacts from the proposal. All necessary funding for the project is either in place or it is feasible *(see* Kittelson September 2006 Kittelson TIA p. 22). Opponents claimed that the City cannot fund the $400,000 for its share of improvements, however, there is evidence in the record that it is feasible for the City to do so.

The City and ODOT currently have plans to complete improvement projects at the I-5/Kuebler Boulevard interchange, and along the westbound direction of Kuebler Boulevard. PacTrust will be responsible for all site frontage improvements as well as other off-site improvements to mitigate their traffic impact.

GOAL 13 - ENERGY CONSERVATION

[8]As is explained in the Kittelson Reports, such access onto Kuebler is not required for the project traffic to flow, but among other positive attributes, it helps the traffic situation on Boone Rd. and in this regard as a good neighbor proposal it deserves strong consideration.

The location of the property is central to the surrounding residential neighborhoods that are otherwise a block of residential uses lacking in bikeable or walkable commercial shopping and service opportunities. The proposal includes a number of bike and pedestrian improvements that will further facilitate alternative modes of transportation for a meeting with friends, eating, shopping or medical services opportunities. Making commercial and service opportunities available within large residential areas, helps to encourage either shorter trips or the use of alternative modes for making a trip. The transportation system in this area makes access to the property direct, efficient and convenient. Its proximity to several residential neighborhoods is likely to reduce the vehicle miles traveled to access commercial services. Due to its location, and proximity to the surrounding neighborhoods, the site will be accessible using alternate modes of transportation. A bus turnout is required in the Salem Clinic conditions of approval and will be established to accommodate the Battle Creek Route 22 bus patrons, something they cannot now enjoy. The bus turnout is made feasible by the fact that the proposal enables the Salem Clinic site to be developed with its medical offices. The site will provide commercial services that would otherwise require travel to more distant locations along the Commercial Street corridor. The location of the site and its use for commercial services promotes the conservation of energy needed for transportation. For these reasons the proposal will help to conserve energy and promote energy efficiency consistent with this Goal.

GOAL 14 – URBANIZATION

The subject property is inside the city. All required public facilities and services can be made available to the property. The site is currently vacant urban land. The use of the site as proposed will contribute to an efficient arrangement of land uses within the UGB, and to the efficient use of urban services, consistent with this Goal. The proposal does not affect the size or location of the Urban Growth Boundary.

For the facts and reasons presented, the proposed Comprehensive Plan Change is consistent with the applicable Statewide Planning Goals.

Criterion 4: The proposed change is logical and harmonious with the land use pattern for the greater area as shown on the detailed and general plan maps.

As shown on the Comprehensive Plan map the land use pattern for the greater area consists largely of residential land. There are two areas of commercial land, the Abiqua School and the Abutting Property (so called the "Salem Clinic" site), and an area of industrial land located east of I-5, outside the City. The residential lands include developed single-family neighborhoods, newly developing subdivisions, and tracts of vacant land. The vacant residential lands in the greater area have the potential for an estimated 3386 new single family homes. The primary street system that serves this area is also part of the land use pattern. This includes Kuebler Boulevard, Battle Creek Road, I-5, and the Kuebler/I-5 interchange.

The subject property is vacant land save one single family residential house developed on it; and it is currently designated for single-family residential use. However, it is centrally located to the surrounding residential lands, it fronts along the primary city streets that serve the area, and it is just west of the I-5 interchange. There are no retail or medical commercial services east of

Commercial Street that serve this residential area, which results in motor vehicle travel from this area to Commercial Street and beyond, which adversely impacts the Kuebler/Commercial intersection. As additional residential development occurs, this impact to Kuebler from trips for needed retail and medical services that only exist in other parts of the City, will increase.

By contrast, commercial uses on the subject property will be proximate to and accessible from the surrounding residential neighborhoods facilitating fewer or shorter trips as well as alternate modes of transportation. The proposed change to allow commercial uses on the subject property is logical with the land use pattern for the greater area because of the proximity of the site to the surrounding residential areas, its location relative to these residential lands and the transportation system, and with regards to its accessibility from the surrounding neighborhoods by use of alternate modes of transportation. All these factors weigh in favor of the logic of having nearby commercial retail and medical services to minimize the need for and length and duration of automobile trips for such services. Further, the presence of Kuebler Blvd. creates a great deal of traffic that can be served by the proposal. This is another factor making the Subject Property a logical one for the proposed use and vice versa. Kuebler Blvd. is a part of the land use pattern for the greater area and providing retail and medical services to the travelers on Kuebler Blvd. makes sense in the context of the greater area as well as the specific vicinity of the Subject Property.

Similarly, the proposed change is harmonious with the land use pattern for the greater area because of its location and proximity to the surrounding residential area, its accessibility by alternative modes of transportation, and because it is located along the major city streets that serve the area. The location of the site provides an alternative to the Commercial Street corridor. This will reduce impacts on Kuebler and at the Kuebler/Commercial intersection. Its proximity to the surrounding residential area will reduce the travel distance to reach commercial services. The accessibility of the site provides the opportunity to reduce the use of motor vehicles to reach commercial services. The site does not abut any "local" streets, and the use of local streets is not necessary in order to reach the site. The location along the major street system, the opportunity to reduce the distance to commercial services, and its accessibility by alternate modes of transportation, make the proposed change harmonious with the land use pattern of the greater area.

Further, previous land use reports concerning the area surrounding the subject property identify it as a place with potential for people to live, work and shop in close proximity (Kampe Associates, 1994); a "community service node which provides community scale office and service-oriented uses with limited I-5 services" (City of Salem Southwest Quadrant Overlay Zone (Staff Report), 1996); and as an area to provide neighborhood services to surrounding and regional residential uses (Salem Futures). Pages 11 through 13 of the applicant's narrative summarize the specific relationship of their request to the transportation system and its project impacts that is detailed in their submitted Transportation Impact Analysis (TIA).

Salem has voter approved annexation. As established in the record, when the land was annexed, the explanatory statement in the voter pamphlet explained that "the petitioner for annexation indicates, however, that the future development of the land would be for commercial uses." The annexation measure was passed by the people of Salem by a 72 percent voter approval.

Based on the factors, the proposed change is logical and harmonious with the land use pattern for the greater area, and this criterion is satisfied.

Criterion 5: The proposed change conforms to all criteria imposed by applicable goals and policies of the comprehensive plan in light of its intent statements; and

The proposal conforms to the applicable goals and policies of the Comprehensive Plan as follows:

Part II. Definitions and Intent Statements

A. Comprehensive Land Use Plan Map

1. Intent:

As described in Part II.A.1 of the Plan, its intent is to project the goal of the most desirable pattern of land use in the Salem area, taking into account various factors such as the transportation system, location of public facilities, and the needs of the people which are important to the creation and maintenance of a healthful and pleasing urban environment. The Plan map demonstrates a commitment that land for a wide variety of uses will be available at appropriate locations. The plan envisions meeting this commitment through the phased provision of land for various uses over time, through annexation and rezoning in response to demand for specific land uses. The Plan recognizes the need to remain responsive to changing and evolving land demands. The intent of this approach is to retain flexibility in order to remain responsive to changing conditions, and to recognize the legitimacy of existing zoning and plan implementation. The Plan recognizes that land use and zoning are expected to change as conditions change.

This proposal is made in conjunction with the evolving and emerging pattern of land use and development that is occurring in southeast Salem. It takes into account the relationship of the subject property to the existing transportation system, and to the improvements to the transportation system that are planned and that will be required to support expected development in the area. The proposal is consistent with the intent of the Plan to provide for the appropriate variety of land uses at an appropriate location, in response to changing conditions in the area. The proposal is made in the context of the plan policies and implementing measures. It is also in keeping with the stated intent of the Plan to remain flexible and responsive to changing conditions, to provide for the phased provision of land for various uses over time, and with the expectation that land use and zoning will change in response to changing conditions.

The on-going changes to the character of the area, in particular the intensification or residential development and the improvements to the transportation system, support the proposed Plan change. The change in the conditions of the area affect the appropriate use of the subject property, and support flexibility in the application of the Plan designation. The proposed Commercial designation is consistent with the Plan's intent to respond to the changes in land use that are occurring, and to provide for the phased provision of land through rezoning, over time,

as conditions change. For these reasons, the proposal is consistent with the intent and methodology of the Plan.

A.3. Plan Map Designation

b. Commercial

The site is proposed to be designated Commercial on the Plan map. As described in the Plan, the intent of the Commercial designation is to provide for the full variety of shopping and service opportunities found throughout the urban area. It includes the category "Community and Neighborhood Shopping and Service Facilities," which is defined to include convenience goods for neighborhood residents and community scale facilities for a market area of several neighborhoods. The subject site is intended to serve a market area of several neighborhoods, which includes the surrounding area to the north and south of Kuebler, including the impending Fairview project, and the residential lands located in the UGB east of I-5. The proposed use is consistent with the category of commercial activity that is provided for in the Plan. A condition of approval has been imposed to limit the scale of the proposal to a community level commercial and service facility.

SACP Residential Development Policy 1 and 2

Opponents argue these policies apply. However, the proposal is to change the designation from Developing Residential to Commercial. Policy 1 speaks to establishing residential uses and residential densities. This policy is inapplicable. Policy 2 speaks to residential facilities and services. Council finds that the proposal complies with this plan policy. By providing a community shopping and service center for the three adjacent neighborhoods to use to shop and enjoy other services together with the significant required bike, pedestrian and vehicle improvements under this decision the proposal furthers the goal of Policy 2. The current situation in the residential area affected here is that the transportation system is failing and lacks multimodal improvements. The proposal accommodates pedestrian, bicycle and vehicle access, it also accommodates population growth and avoids the hazards of a failing transportation system. As such, policy 2 is met.

Part IV. Salem Urban Area Goals and Policies

B. General Development Goal: To insure that future decisions concerning the use of land within the Salem urban area are consistent with State Land Use Goals.

The relationship of this proposal to the Statewide Planning Goals has been addressed above in these findings. The proposal has been shown to be consistent with the applicable Goals.

Policies:

3. Economic Growth: Economic growth which improves and strengthens the economic base of the Salem area should be encouraged.

The proposal is to provide a community commercial center for the residential neighborhoods in the southeast part of the city. The proposed uses include retail, service, and office activities. The project will improve and strengthen the economic base of the urban area, which is consistent with this policy.

6. Carrying Capacity: All public and private development shall meet the requirements of applicable local, state and federal standards.

Development of the site will require connections to public facilities to provide for utility services. Public facilities are available at this location at adequate levels to serve the proposed use. The City's utility services are required to meet all applicable local, state and federal standards. By utilizing public services at the levels specified by the City, the proposal will operate within the carrying capacity of the land and the available public services. Opponents argue this provision is not met because of their claims that the TPR is not met. Council disagrees that the requirements of the TPR are not satisfied or that this policy is not met. As explained in detailed findings in other parts of this decision, the proposal meets all Goal 12 and TPR standards. This plan standard is met.

7. Optimal Use of the Land: Structures and their siting in all residential, commercial, and industrial developments shall optimize the use of land . . . Development should minimize adverse alteration of the natural terrain and watercourses, the potential for erosion and adverse effects upon the existing topography and soil conditions.

Development of the site can optimize the use of the land by providing a development density so that a range of services are provided at this location. The use of the land can also be optimized through efficient on-site circulation, specified and limited points of access to the adjacent streets, by providing for access from alternate modes of non-motorized transportation, and by planning for transit access. It can also optimize the use of the land by providing setbacks and buffers from adjacent residential lands, and by maintaining appropriate setbacks form adjacent streets.

Required parking and driveway circulation, setbacks and landscaping, will be provided on the site. The site presents no special or unusual terrain features that will be adversely affected or unusual obstacles to development. There are no watercourses within the site. The development as proposed will have no unusual effects upon the existing topography or soil conditions at the site, other than grading and site preparation that is typical for building construction. Based on these factors, the proposed use will optimize the use of the land in keeping with this policy.

12. Development Compatibility: Land use regulations which govern the siting of any development shall encourage development to reduce its impact on adjacent properties by screening, landscaping, setback, height, and mass regulations.

This plan provision guides the development of implementing land use regulations. It is inapplicable here.

14. Screening of Storage: Outdoor storage areas should be screened from the public streets and from adjacent uses.

Any outdoor storage areas will be screened in accordance with City standards.

15. Lighting: Exterior lighting shall be designed to provide illumination to the site and not cause glare into the public right-of-way and adjacent properties.

Any outdoor lighting included as a part of the project will be designed to illuminate the site, to provide safety and security for the premises, and to meet the standards required by the zone code to prevent glare into the public right of way or adjacent property, consistent with this policy.

G. Commercial Development Goal: To maintain and promote the Salem urban area as a commercial center for the Marion-Polk County metropolitan area.

Salem serves as the commercial center for the Marion-Polk metropolitan area. The downtown central business district is regarded as the regional business center. With the exception of Lancaster Mall, which is also regarded as a regional facility, commercial development in outlying parts of the urban area are "specialized" commercial areas, "community and neighborhood shopping and service facilities" that provide goods and services to local residents or an area of several neighborhoods, or "convenience" stores. Providing "community and neighborhood" level commercial facilities at various locations maintains the city as the center of commercial activity for the Marion-Polk metropolitan area. The proposal is to designate a site to provide community and neighborhood level commercial activity, in a developing area that is lacking a location for this type of activity. By providing this developing, outlying area with an appropriate level of commercial facilities, the proposal will contribute to maintaining the Salem urban area as a commercial center for the Marion-Polk metropolitan area, consistent with this goal.

Policies

2. Shopping and Service Facilities: Development of shopping and service facilities may be approved only after reviewing a development plan consisting of maps and written statements.

This policy applies to the development of shopping and service facilities, and is not directly applicable to this application. Information required by this policy will be provided at the time the site is proposed for development. The location of buildings, arrangement of parking and loading facilities, on-site circulation, buffer yards, setbacks, and landscaping, and other features as may be required, will be shown on the detailed building plans that will be submitted for permits. The impact of the redesignation of the site on adjacent neighborhoods is discussed in these findings, and the traffic impact of a "worst-case" commercial development on the adjacent street network has been analyzed in the TIA. The availability of transit service is a part of the pre-application comments from the Transit District. Utility and storm water plans are subject to City design standards and will be reviewed and approved prior to site development. The necessary information will be provided on the plans submitted at the time development permits are requested. The requirements of this policy are met by providing the referenced information for review and approval prior to development of the site.

4. Community Shopping and Service Facilities: Community shopping and service facilities shall be located adjacent to major arterials and shall provide adequate parking and service areas. Land use regulations shall include provisions for siting and development which discourage major customer traffic from outside the immediate neighborhoods from filtering through residential streets.

The subject site is adjacent to the two major streets that serve this part of the urban area. Kuebler Boulevard is a Parkway and a type of "major arterial," and Battle Creek is a Minor Arterial (TSP). Based on its location along these major streets, the subject property is appropriate for the category of use proposed. Adequate parking will be provided on the site according to zone code standards for the type of use, and will be shown on the development plans. The location along the major thoroughfares in this area provides for access that does not impact local neighborhood streets. The location along Kuebler and Battle Creek will allow traffic from outside the immediate neighborhoods to access the site without filtering through residential streets.

An objection was raised concerning whether the proposal was consistent with the SACP Policy that requires Community Shopping and Service Facilities to be located along a "major arterial." Opponents of the proposal stated that Kuebler was not a "major arterial." Council finds that Kuebler Boulevard is classified as a "Parkway" and a "Parkway" is a type of arterial – a major arterial. Council further finds that the point of the Policy as is clear from its words and context is to ensure that community shopping and service facilities are located on high traffic streets that are able to accommodate the traffic such facilities involve. Kuebler as a major arterial – a "Parkway". Thus the purpose of the SACP Commercial Development Policy is to ensure that community commercial development has adequate access and that traffic coming to and going from such development does not cause significant adverse impacts on nearby residential neighborhoods. As explained in the TIA, Kuebler Blvd. is able to accommodate the traffic from the proposed use and in fact under the proposal the area transportation system including Kuebler Blvd, will function better than it currently does under the proposal.

However, the opponents' primary premise: that Kuebler as a "Parkway" is not a "major arterial" as that term is used in the SACP is incorrect in any event. Neither the SACP nor the Salem Transportation System Plan (TSP) expressly defines a "major arterial." However, Council finds that the most reasonable interpretation of "major arterial" includes a Parkway as a type of high-capacity, high-volume arterial. The text and context of the City's TSP supports this interpretation. Specifically, Kuebler Boulevard is expressly defined as an "Arterial" street in the City's TSP Street Classification Chapter;

The City's TSP "Street System Element" Chapter at 3-59 states the following:

> Arterial Street System - South Salem has few north-south arterial streets and even fewer east-west arterials. North-south arterials include: Commercial Street SE (Major Arterial), Liberty Road S (Minor Arterial), Skyline Road S (Major Arterial), River Road S (Minor Arterial), and Croisan Scenic Way S (future Minor Arterial). East-west arterials include: Madrona Avenue S (Minor Arterial),

Mission Street SE (Minor Arterial), Mildred Lane SE (Minor), and Kuebler Boulevard S (Parkway). (Emphasis supplied.) See also City TSP at 3-66:

> Arterial Street System - Southeast Salem has several north-south arterials. They include Commercial Street SE (Major Arterial), 12th Street SE/13th Street SE (Major Arterials), Lancaster Drive SE (Major Arterial), 25th Street SE (Major Arterial) Pringle Road SE (Minor Arterial), Battle Creek Road SE (Minor Arterial), Sunnyside Road SE (Minor Arterial), Turner Road SE (Minor Arterial), Aumsville Highway SE (Minor Arterial), and Airport Road SE (Minor Arterial). The east-west arterials are fewer and include: Mission Street SE/Highway 22 (Parkway/Freeway), State Street (Major Arterial), Madrona Avenue SE (Minor Arterial/Major Arterial east of Fairview Industrial Drive SE), McGilchrist Street SE (Major Arterial), Kuebler Boulevard SE (Parkway), and Mildred Lane SE/Fabry Road SE (Minor Arterial). Kuebler Boulevard SE provides a major portion of the region's circumferential travel route. Mission Street SE (Highway 22) also serves as a major east-west route through Salem, connecting via Pringle Parkway SE and Front Street SE to the Willamette River bridges. (Emphases supplied.)

While for purposes of street design, "Parkways" and "Major Arterials" have different design characteristics; this does not change the fact that a Parkway is a type of major arterial that simply must be designed differently because it carries more traffic (TSP Table 11 - the city Street Classification System and Basic Design Guidelines).

The SACP never uses the term "parkway." Rather it speaks in terms of "major" arterials. This is further contextual support that the term "major arterial" used in the SACP is a generic one and includes parkways as a type of major arterial.

The Salem TSP glossary includes definitions of different classes of streets, arterials, collectors, and local streets, but does not include a separate definition of "parkway." Arterial streets are defined as "high capacity-and typically high speed-streets that serve both intra- and intercity travel needs of the community." This is a blend of the Table 11 identification of functions for Parkways and Major Arterials:

> Parkway - High Capacity, high speed roadway that primarily serves regional and intracity travel.
>
> Major Arterial - High-capacity street that primarily serves regional and intracity travel. Serves as main radial and peripheral routes through the City.

This further supports that a Parkway is a type of major arterial.

The policy of locating commercial facilities near major arterials has been in the SACP, in one form or another, since at least 1975. The 1975 SACP states: "Community shopping and service facilities shall be located *close* to major arterials and shall provide adequate parking and service

areas." (Emphasis added). That language remained unchanged until 1992, when the policy was amended and "close to" was amended to say "adjacent to."

In the 1980's the Salem Transportation Plan (precursor to the Salem Transportation System Plan) classified city streets in three categories: Local Streets, Collectors and Arterials. Arterials were further separated into designations based on the volume of traffic each type of arterial was meant to carry. There was no "parkway" subset at this time.

In 1982, the SACP was acknowledged by DLCD. The Salem Transportation Plan was created as a detailed plan for the SACP and was intended to "guide the actions of the City in developing the portion of the transportation system within its boundaries." The Transportation Plan created six "Functional Classifications" for streets: Freeway, Expressway, Principal Arterial, Minor Arterial, Collector and Local. The Transportation Plan Street System Map states that the classification system:

> "[Has] been officially adopted by the SATS [Salem Area Transportation Study], however, the entire system is not utilized on this map. Expressways, Major Arterials, and Minor Arterials are all grouped under the same heading - Arterials."

Therefore, as far back as 1982, the City, through its Transportation Plan, considered Expressways (now termed "Parkways") a type of arterial. In fact, the Plan did not even have a class of road called "Major Arterial." The phrase "Major Arterial" as used in the quoted text is used in the generic sense to identify all "major" arterials.

In 1990 a new Salem Transportation Plan was adopted as a detailed plan for the SACP. The Transportation Plan expanded and renamed some street classifications. The 1990 Transportation Plan street classifications contained:

Freeway	A major, limited access highway or interstate freeway.
Beltline arterial	A *major*, limited access *arterial street* that forms a continuous route around the City.
Principal Arterial	An arterial anticipated to carry generally over 30,000 vehicles per day.
Major Arterial	An arterial anticipated to carry generally over15,000 vehicles per day. This classification also includes Phased Arterials which are anticipated to only need two travel lanes until after 2005, when four lanes will be needed.
Minor Arterial	A street serving an arterial function carrying less than 15,000 vehicles per day.
Collector	A through street that carries traffic from local streets to arterials or major activity centers.

Local	A street providing local access to adjacent land uses and carrying traffic to a collector or arterial street. (Emphasis supplied).

Salem Transportation Plan, page 108, adopted August 1990.

As set forth above, it is apparent that the City, through its planning policies, has long considered the SACP policy regarding locating "Community Shopping and Service Facilities" along major arterials as referring to arterials that carry major amounts of traffic, not "Major Arterials" referring to a design classification. For example, when the 1990 Transportation Plan was drafted and adopted by the City as part of the Comprehensive Plan, Lancaster Drive was classified as a "Principal Arterial." 1990 Salem Transportation Plan. Therefore, narrowly interpreting the phrase "major arterial" would mean that the various community level commercial developments on Lancaster Drive would not be permitted there after all, because it was classified as a "Principal Arterial" and not a "Major Arterial."

Further evidence that a Parkway is a type of "major arterial is found in the TSP which states:

> The Street Classification System determines the function or "mission" of each street in the City's street system. A streets functional classification determines what type of traffic should use the street - regional, intra-city, or neighborhood. The type of traffic combined with expected traffic volumes, determines whether a street is an *arterial, collector, or local street.* (Emphasis supplied.)

The TSP uses these classifications when it identifies "Arterials" and "Collector Streets" for South Salem. The TSP expressly classifies Kuebler Boulevard as a type of "Arterial" *(see* the list of South Salem Arterial Streets in the TSP at 3-59).

> Arterial Street System - South Salem has few north-south arterial streets and even fewer east-west arterials. North-south arterials include: Commercial Street SE (Major Arterial), Liberty Road S (Minor Arterial), Skyline Road S (Major Arterial), River Road S (Minor Arterial), and Croisan Scenic Way S (future Minor Arterial). East-west arterials include: Madrona Avenue S (Minor Arterial), Mission Street SE (Minor Arterial), Mildred Lane SE (Minor), and **Kuebler Boulevard S (Parkway).** (Emphasis supplied.). (TSP 3-43-44, 3-49)

See also TSP at 3-66:

> Arterial Street System - Southeast Salem has several north-south arterials. They include Commercial Street SE (Major Arterial), 12th Street SE/13th Street SE (Major Arterials), Lancaster Drive SE (Major Arterial), 25th Street SE (Major Arterial) Pringle Road SE (Minor Arterial), Battle Creek Road SE (Minor Arterial), Sunnyside Road SE (Minor Arterial), Turner Road SE (Minor Arterial), Aumsville Highway SE (Minor Arterial), and Airport Road SE (Minor Arterial). The east-west arterials are fewer and include: Mission Street SE/Highway 22 (Parkway/Freeway), State Street (Major Arterial), Madrona Avenue SE (Minor Arterial/Major Arterial east of Fairview Industrial Drive SE),

McGilchrist Street SE (Major Arterial), **Kuebler Boulevard SE (Parkway),** and Mildred Lane SE/Fabry Road SE (Minor Arterial). Kuebler Boulevard SE provides a major portion of the region's circumferential travel route. Mission Street SE (Highway 22) also serves as a major east-west route through Salem, connecting via Pringle Parkway SE and Front Street SE to the Willamette River bridges. (Emphases supplied.)

Moreover, throughout the TSP, there are references to arterials, collectors and local streets, as the three basic street types in the City. (Council finds that this classification is consistent with the SACP, and the generally accepted classifications used by other municipalities and the Federal Highway Administration *(see Just v. City of Lebanon*, 49 Or LUBA 180, 198 n 11 (2005, explaining a parkway in that city is a type of arterial). Based on these references and the specific identification of Kuebler Boulevard at 3-59 of the TSP, Parkways are considered part of the arterial street system that carry a high volume of traffic – they are "major arterials" in this sense, and as that phrase is used by the SACP. They have a different functional classification within the street system to reflect this high level of travel.

SACP Policy IV (G)(4) for Commercial Development requires that community shopping and service facilities shall be located adjacent to major arterials. In the context in which this standard exists and has been used by the City over time, this refers to high travel streets in the city – major arterials including Parkways, as opposed to only those arterials that carry the design classification of "Major Arterial." Consistent throughout the TSP, the Salem street system is described as being composed of arterials, collectors and local streets, and that parkways are part of the system of arterials.

Council finds that based on the text and context of the SACP use of the term "major arterial", the phrase "major arterial" is used in SACP Policy IV (G)(4) in a generic sense to indicate a high capacity, high volume arterial street, and that Kuebler Boulevard is such a street. Accordingly, the proposal is consistent with this plan policy.

5. Commercial Development – Neighborhood and Community Shopping and Service Facilities: Unless the existing development pattern along arterials and collectors commits an area to strip development, new commercial development shall be clustered and located to provide convenience goods and services for neighborhood residents or a wide variety of goods and services for a market area of several neighborhoods.

There is no other commercial development similar to the proposed community level retail shopping and medical facility in the vicinity. The area is not committed to strip development. Commercial Street SE generally provides "strip development" in contrast to the subject property and proposed project area that is rectangular in shape and facilitates clustered commercial development. Council interprets the term "clustered" to mean that the development of the subject site form a single commercial service cluster or group. The proposal is for such a cluster that is located to serve a market area of the surrounding neighborhoods in the sense that people in the surrounding neighborhoods are likely to shop for retail goods and services there. The site is bordered by four streets, which are Kuebler Boulevard, Battle Creek Road, Boone Road, and 27th Avenue. Development will be confined within these boundaries. The depth of the property from the frontage along Kuebler Boulevard avoids formation of a strip development pattern

along that frontage. The CN (Commercial Neighborhood) zoning at the southwest corner of Kuebler Boulevard and Battle Creek Road is the only other commercial zoning along either major street. Due to its location adjacent to the arterial streets that serve this part of the urban area, and the nature of the transportation system that serves the location, the site is appropriately located to provide services for neighborhood residents as well as a market area of several southeast Salem neighborhoods. For these reasons the location of the site is consistent with this policy.

8. Buffer strips from residential uses shall be provided for all commercial development.

Single-family residential neighborhoods are located to the south of the subject site, across Boone Road. The buffer yard setback, screening and landscaping requirements of SRC Chapter 132 will apply to the site to provide the required buffer.

Landscaping, buffering, and screening of land, as required by SRC 132, preserve the livability of the community, aesthetically and environmentally; safeguard and enhance property values; and protect public and private investments. The intent of Chapter 132 is provided by the use of plant materials to provide buffering and screening to mitigate harmful effects of the sun, wind, rain, noise, lack of privacy, and differing adjacent uses. The use of plant materials also defines spaces, articulates the uses of specific areas, and unifies elements of a site. Landscaped buffer strips will be provided along the boundaries of the subject property, visually separating the site from adjacent residential uses. The buffer strips policy can be met at the time of development.

A sight-obscuring fence or wall as well as landscaping can be provided along the property lines, as required. The Zoning Code requirement for buffer yards and screening as a development standard serves to address this policy.

E. Residential Development Goal: To promote a variety of housing opportunities for all income levels and an adequate supply of developable land to support such housing.

The site is designated Developing Residential for future single family housing. As noted above, there will be adequate land for additional single family housing within the UGB after this 18.4 acre site is removed from the housing inventory. As explained above, the site constitutes .17% percent of the existing inventory of vacant land for single family housing, and the remaining inventory is adequate to provide for the forecasted need for single family housing. Redesignating the subject property to Commercial will not have an adverse effect on the ability to provide a variety of single family housing opportunities in the city, within the UGB, or in this local area. For these reasons the proposal does not affect the Residential Development goal.

For the reasons, factors, and circumstances presented, the proposal conforms to the criteria imposed by the applicable goals and policies of the Comprehensive Plan in light of its intent statements, and this criterion is satisfied.

Policy 11 considers handicapped access: "Building facilities open to the public should be well designed to fulfill their specified function, taking into consideration the needs of handicapped persons." Any commercial development must take the needs of disabled ("handicapped")

persons into consideration. All parking and other access requirements must meet Americans with Disabilities Act (ADA) requirements. This Policy is not applicable to a Comprehensive Plan Change, and can be met at the time of development.

The City's goals and policies pertaining to transportation are found in the City's TSP and as relevant to the proposal are discussed below.

Council generally finds that compliance with the Statewide Planning Goal 12 and the TPR establishes compliance with City plan standards regarding transportation.

> Transportation Goal: To provide a balanced, multi-modal transportation system for the Salem Urban Area that supports the safe and efficient movement of goods and people.
>
> 1. The Salem Transportation System Plan shall contain goals, objectives, policies, plan maps, and project lists that will guide the provision of transportation facilities and services for the Salem Urban Area.

This provision is not an applicable standard for the proposal. Rather, it guides how the City's TSP is developed. The TSP contains Goals, Objectives and Policies. Policy 1.1, Multi-modal capacity, a subsection of Street System Element Objective 1, Street System Element Goal 1 states *"[t]he City shall fulfill its system wide travel capacity needs through the utilization of multiple travel modes within the public right-of-way."*

The subject property is adjacent to a parkway (Kuebler Boulevard) which is a type of major arterial as that term is used in the SACP. It is also near a minor arterial (Battle Creek Road SE), and two collector streets (27th Avenue SE and Boone Road SE). Battle Creek Road SE is served by public transit (22 Battle Creek) and bicycle lanes that extend from north of Kuebler Boulevard to south of Boone Road SE. According to the Salem TSP, extensions of the bicycle lanes are planned south from Battle Creek Road SE to the terminus of Robins Lane at Commercial Street SE. There are bike lanes north of Kuebler Boulevard, along Battle Creek/Pringle Road.

TSP Street System Element Objective No. 2: Design City streets in a manner that maximizes the utility of public rights-of-way, is appropriate to their functional role, and provides for multiple travel modes, while minimizing their impact on the character and livability of surrounding neighborhoods and business districts.

TSP Policy 2.1 Multi-modal Street Design. The City of Salem shall design its streets to safely accommodate pedestrian, bicycle, and motor vehicle travel.

The proposed development of the subject property will provide additional right-of-way along Battle Creek Road SE and Kuebler Boulevard. This standard is met by the imposition of the conditions of approval as outlined in this decision and the applicant's TIA. The proposal is consistent with the functional role of all affected streets as explained in other parts of these findings. The design of streets under the proposal will maintain livability and the character of

the area by improving transportation circulation so that the transportation system functions. The Boone Road driveway is required in this decision to be unified on the Salem Clinic property and offset from Cultus Avenue to minimize impacts to the residential uses on Cultus. Further, while Council finds that the evidence supports a conclusion that the proposal will not create cut-through traffic problems on Cultus, this decision also imposes a condition of approval that if traffic calming devices are warranted, the applicant is required to pay $5,000 toward their installation as required by the City Public Works Director. The area currently does not have safe and adequate pedestrian and bicycle facilities. The proposal will significantly improve the affected area streets to City standards and such facilities will be supplied under the proposal. This provision is met.

Policy 2.2 Multimodal Intersection Design. Arterial and collector street intersections shall be designed to promote safe and accessible crossings for pedestrians and bicyclists. Intersection design should incorporate measures to make pedestrian crossings convenient and less of a barrier to pedestrian mobility. Accommodations shall be made for transit stops at or near street intersections.

This standard is met as explained in the TIA and under the conditions of approval required by this decision. The proposal includes significant street improvements including sidewalks and bike facilities which do not now exist. The area is served by transit from Battle Creek Road Route 22. As a condition of the previous Salem Clinic plan amendment and zone change, the Salem Clinic site is required to establish a transit shelter and stop. The applicant is required under this decision to assure that condition is met for its development as it necessarily involves the concurrent development of the Salem Clinic property and the shared driveway from the property onto Boone Road. This standard is met.

Policy 2.3 Arterial and Collector Street Intersections. Left-turn pockets shall be incorporated into the design of all intersections of arterial streets with other arterial and collector streets, as well as collector streets with arterials and other collectors.

A left-turn pocket is provided at 27th Avenue onto Kuebler Boulevard, and at Battle Creek Road SE onto Kuebler Boulevard. Provisions for additional right-of-way along the roads that border the property will provide for an enhancement of their street intersections at a future date.

Policy 2.4 City of Salem Street Design Standards. The City of Salem Design Standards shall be the basis for all street design within the Salem Urban Area.

The TIA and conditions of approval are based on assumptions contained in the Street Design Standards.

Policy 2.8 Physical Improvements to Existing City Streets: Existing streets that are to be widened or reconstructed shall be designed to the adopted street design standards for the appropriate street classification. Whenever possible, the design of the street shall be sensitive to the livability of the surrounding neighborhood.

The proposed development of the subject property will provide additional right-of-way on adjacent streets. The additional right-of-way will accommodate pedestrians, bicycles and motor vehicles in a safe manner and provide for landscape strips adjacent to the street. A condition of approval is imposed requiring a contribution of $5,000 for neighborhood street calming improvements to be distributed by the City as it deems appropriate. The location of the driveway to the property from Boone Road shall be shared with the Salem Clinic property to further limit traffic on Boone Road. Moreover, the location of the Boone Road entrance to the subject property is to be coordinated with the City to develop an entrance having the least possible impact on the adjacent residential area while still maintaining adequate site mobility. The decision includes a requirement that the developer offset their access driveway along Boone Road SE from Cultus Avenue at a location approved by the Salem Public Works Director. Other findings in this document explain that appropriate street classifications will be observed in the reconstruction and street widening. This standard is met.

Street System Element Objective No. 5: A street system that is improved to accommodate travel demand created by growth and development in the community.

Policy 5.1 – Traffic Impact Analysis Requirements: The City shall require Traffic Impact Analyses as a part of land use development proposals to assess the impact that a development will have on the existing and planned transportation system. Thresholds for having to fulfill this requirement and specific analysis criteria are established in the City of Salem Street Design Standards.

City staff advised the applicant to prepare a Transportation Impact Analysis (TIA) prior to submitting an application for the Comprehensive Plan Map and Zone Change. At City staff's request, the applicant submitted a TIA that addressed the proposed Plan and zone change and also the development of the entire project area composed of 28.4 acres. The applicant submitted a draft TIA to the City Traffic Engineer prior to submitting the Comprehensive Plan Map change request, in April 2006. Based on City and ODOT comments, the applicant submitted a final TIA which accommodated the requests of these agencies and is supported by both City staff and ODOT. Council finds that the final, September 2006 TIA submitted by the applicant meets all legal standards and is adequate. As Council explained above, the traffic counts used in that TIA were appropriate and are not stale. The age of traffic counts for purposes of a TIA under city guidelines is measured from the time counts are taken to the time the TIA is prepared. The TIA meets all city standards and establishes that the transportation improvements recommended in the applicant's TIA and required herein are consistent with the City of Salem Design Standards. The applicant's TIA is an adequate basis upon which the City based mitigation requirements.

Policy 5.2 – Exactions Required of Development: The City may require new development to make site-related, right-of-way dedication and transportation system improvements that are identified through the Traffic Impact Analysis process and other Code requirements.

The applicant is required to install the system improvements identified in the TIA as appropriate applicant mitigation including dedications as required in that TIA analysis and in this decision.

Bicycle System Element Goal: To provide a comprehensive system of connecting and direct on-street bicycle facilities that will encourage increased ridership and safe bicycle travel.

Bicycle System Element Objective No. 1: The City of Salem will create a comprehensive system of bicycle facilities.

Policy 1.1 – Provide Bicycle Facilities on Arterial and Collector Streets:
When improvements are made to the intersections surrounding the Subject Property, Policy 1.1 of the Bicycle System Element Objective will be met by providing bicycle lanes.

Pedestrian System Element Goal: To provide a comprehensive system of connecting sidewalks and walkways that will encourage and increase safe pedestrian travel.

Pedestrian System Element Objective No. 1: The City of Salem shall create a comprehensive system of pedestrian facilities.

Policy 1.3 – Focus Attention on Intermodal Connections.

Policy 1.4 – Ensuring Future Sidewalk Connections.

Policy 1.5 – Complete Connections with Crosswalks.

Policy 1.6 – Compliance with ADA Standards.

Pedestrian connections will be provided from the public sidewalks through the Subject Property as part of the development of the property. There are no existing sidewalks along the perimeter of the Subject Property. Improvements along Battle Creek Road SE, Boone Road SE and 27th Avenue SE include street lights and sidewalks on the development side of the Subject Property. ADA compliance will occur at the time of completion of all pedestrian-related improvements, which are required as part of and prior to the development of the property. This standard is met.

Pedestrian System Element Objective No. 2: The City of Salem shall seek to double the 1995 percentage of trips made by pedestrians by the Year 2015.

Policy 2.2 – Pedestrian Supportive Land Uses.

Policy 2.3 – Promotion of Walking for Health and Community Living.

At present there are no pedestrian connections or safe pedestrian walking opportunities to and around the Subject Property. The proposal allows for crosswalks, and sidewalks. The proposal enables people living at least within a one-quarter (0.25) mile of the Subject Property to walk to medical services as well as to shopping and related services. This is a significant improvement in the pedestrian opportunities currently provided. This standard is met.

Transportation – Neighborhood Livability Policy 19.

Transportation – Aesthetics and Landscaping Policy 20.

The Subject Property abuts the intersections of a minor arterial street with a parkway and collector street. Additional pedestrian connections to and through the Subject Property will encourage people to walk to the Subject Property and will encourage the use of public transit to the Subject Property. Salem-Keizer Transit serves the Subject Property (22 Battle Creek) and development of the Subject Property will encourage the use of the public transit system. Policy 19 can be met. The provision of additional right-of-way will provide extra areas for landscaping in addition to on-site landscaping and screening. Policy 20 is met by the proposal.

Criterion 6: The proposed change benefits the public.

The proposed change will benefit the public by providing a center for goods and services at a central location within a major existing and developing residential sub-area. The location of the Subject Property is consistent with the intent to establish residential neighborhoods in proximity to such services, as expressed in SACP Residential Development Policy 1.d. The Subject Property is located along the major access routes to the surrounding residential areas, and the availability of services at this location will decrease the travel distance from the neighborhoods to commercial services, which are currently located along Commercial Street. A commercial center at this location will also change the direction of travel that is currently required to obtain commercial services from this area, and as a result decrease the traffic impact at the Kuebler-Commercial intersection. In addition, as a result of its proximity to the surrounding neighborhoods, the Subject Property will be accessible by alternate means of transportation, and provide the opportunity to decrease usage of private motor vehicles.

The proposed SACP plan map amendment will benefit the public because the change will promote commercial development that can serve several neighborhoods, and will provide for the mechanism to upgrade all adjacent transportation facilities to meet current standards so that they perform at an adequate level of service which they do not now do. The proposal will provide for additional right-of-way along Kuebler Boulevard and Battle Creek Road SE for bike lanes, and provide for future up-grades to all adjacent existing intersections.

For these reasons, the Council finds that the proposed minor plan change is a benefit to the public.

FINDINGS APPLYING TO THE APPLICABLE SALEM REVISED CODE CRITERIA FOR ZONING MAP AMENDMENT

SRC 114.160 provides the criteria for approval for Zone Map amendments. In order to approve a quasi-judicial Zone Map amendment request, the administrative body shall make findings based on evidence provided by the applicant demonstrating that all the criteria and factors are satisfied. The extent of the consideration given to the various factors set forth below will depend on the nature and circumstances of each individual case. Unless any of the factors are deemed irrelevant, something more than an unsupported conclusion will be required, but the degree of detail in the treatment of relevant factors will depend on the degree of proposed change or deviation, and the scale and intensity of the proposed use or development. The requisite degree

of consideration is directly related to the impact of the proposal -- the greater the impact of a proposal in an area, the greater is the burden on the proponent.

The applicable criteria and factors are stated below in **bold** print. Following each criterion is a response and/or finding relative to the amendment requested. The applicant met all applicable criteria.

Criterion 1: The applicant for any quasi-judicial land use action under this zoning code shall have the burden of proving justification for the proposal. The greater the impact of the proposal in an area, the greater is the burden on the proponent.

Criterion 2: The proposal must be supported by proof that it conforms to all applicable criteria imposed in this zoning code; that it conforms to all standards imposed by applicable goals and policies of the comprehensive plan in light of its intent statements, including adopted neighborhood plans; and that it conforms with all applicable land use standards imposed by state law or administrative regulation. The burden rests ultimately on the proponent to bring forward testimony or other evidence sufficient to prove compliance with these standards. At a minimum, the proponent's case should identify and evaluate the proposal in the context of all applicable standards.

Criterion 2 The intent and purpose for zone changes is described in SRC 113.100(a). The zone change at issue in this case is a zone change from RA to CR for the Subject Property composed of 18.4 acres. In this section, it is recognized that due to a variety of factors including normal and anticipated growth, changing development patterns and concepts, and other factors which cannot be specifically anticipated, the zoning pattern is not anticipated to remain static. The zone change review and that it conforms with all applicable land use standards imposed by state law or administrative regulation. The burden rests ultimately on the proponent to bring forward testimony or other evidence sufficient to prove compliance with these standards. At a minimum, the proponent's case should identify and evaluate the proposal in the context of all applicable standards.

The intent and purpose for zone changes is described in SRC 113.100(a). The zone change proposal at issue in this case is from RA to Commercial Retail (CR) for the Subject Property composed of 18.4 acres. In this section, it is recognized that due to a variety of factors including normal and anticipated growth, changing development patterns and concepts, and other factors which cannot be specifically anticipated, the zoning pattern is not anticipated to remain static. The zone change review process is established as a means of reviewing proposals and determining when they are appropriate. This proposal responds to ongoing development of the extensive areas of residential land in the southeast part of the city. The basis for the proposal is the recognition that commercial services should be located in proximity to residential neighborhoods in order to reduce travel distances, make more efficient use of the transportation system, and afford the public transportation alternatives, among others. These factors have been

recognized in various land use and transportation studies that have focused on the lands around the Kuebler interchange. There are no other vacant sites in the area that are designated for commercial use, and this zone change is the means provided for addressing the lack of commercial services for this area.

The Subject Property is proposed to be rezoned to CR to implement the requested Commercial SACP plan map designation. The proposed zone change is based on the relationship of the site to the land use and transportation patterns that are present at this location. These factors are consistent with the provision for zone changes as described in SRC 113.100(a). Council finds that the proposed zone change is "appropriate" based on the application of these factors. Moreover, the Council finds that the Applicant has met its burden of proof on all relevant criteria.

Criterion 3: In addition to the proof under [Criteria 1 and 2] above, the following factors should be evaluated by the proponent and shall, where relevant, be addressed by the administrative body in its final decision:

Factor 1: The existence of a mistake in the compilation of any map, or in the application of a particular land use designation to any property in this zoning code or the comprehensive plan;

Factor 2: A change in the social, economic, or demographic patterns of the neighborhood or of the community;

Factor 3: A change of conditions in the character of the neighborhood in which the use or development is proposed;

Factor 4: The effect of the proposal on the neighborhood, the physical characteristics of the subject property, and public facilities and services:

Factor 5: All other factors relating to the public health, safety, and general welfare which the administrative body deems relevant.

In applying this provision, Council finds that these factors are not approval standards for the proposal. Rather, they are factors to be weighed and balanced. No particular factor is weighed any heavier than any other. The absence of the applicability of a particular factor is not dispositive.

Factor 1:

The lack of a site for commercial services in this area could be regarded as a mistake in the land use plan. Originally, however, Salem's plan was Euclidean and separated uses such as commercial and residential uses creating a driving economy. Social policy has changed and the focus now is on mixing land uses to facilitate multiple modes of travel. Accordingly, a mistake in the land use designation is not the basis for this change, rather it is a change in land use policy

in favor of mixing land uses to provide for fewer vehicle miles traveled, and greater pedestrian, bicycle and transit opportunities. Accordingly, this factor is not relevant to the proposal.

Factor 2:

As explained above, Council finds there is a social policy shift regarding land use planning, focusing on mixing uses to support multiple modes of travel. This is a social change in the community. The ongoing development of the southeast part of the community has resulted in changes in its social, economic, and demographic patterns in the sense that the area has grown without commercial service opportunities keeping pace. The construction of large numbers of new homes to the north and south of the site have increased the population in the area, and converted vacant land to developed neighborhoods. According to the "SKATS Population Growth by Subarea 1993-2015" map, included in the STSP as Map 2, the population of south Salem is projected to increase by 58 percent. According to the "SKATS Employment Growth by Subarea 1990-2015" map, included in the STSP as Map 3, employment in south Salem is projected to increase by 91 percent. Council finds that these are changes in the social, economic and demographic patterns of this part of the community. The increase in the population, employment, and the number of households in the area creates a local market for goods and services. This is a change in the economic pattern of the area. Despite the ongoing increase in the number of households and the population, no land has been designated for commercial uses to serve the population. The proposed zone change will create a commercial center to serve the population of the southeast part of the city, specifically the general three-neighborhood area identified as the "vicinity." This will provide an opportunity for neighborhoods to have shopping and other services that the area currently lacks. For these reasons, the proposed zone change is consistent with the changes in the social, demographic, and economic patterns of the neighborhood and the community.

Factor 3:

As discussed previously and as described in (2), there has been a change in the conditions in the character of the neighborhood as a result of the ongoing development of formerly vacant land. At the time the plan was developed southeast Salem was a small relatively rural area of the City with relatively few retail and service needs. Since then, housing and population density in the vicinity has increased, with resultant increases in traffic and a lack of commercial retail services has exacerbated the traffic problems in the area. Additional development is continuing this change. Currently, the traffic system in the area fails. The proposed zone change to CR will create a commercial retail and service facility to serve the surrounding community, reduce vehicle miles traveled to reach commercial services, and create adequate levels of transportation service. The proposal is consistent with a policy to respond to the changes that have occurred in this area. The proposal will provide a community center that will be appropriate for the existing and continuing changes to the conditions of the character of the neighborhood.

Factor 4:

The effect of the proposal on the neighborhood will be to provide commercial services in proximity to residential areas, rather than additional residential development. Another effect will

be that the commercial retail services established under the proposal will be accessible by alternate, non-vehicular modes of transportation.

This zone change is proposed in response to the lack of commercial services to serve the abutting neighborhoods. The overall project will increase the inventory of commercial land available to retail businesses. The zone change provides an opportunity to expand and diversify the range of commercial, retail and professional services available to the neighborhoods in the vicinity of the subject property. The change in use from residential to commercial will have a beneficial impact on the surrounding area and will improve the appearance of the area with the provision of landscaped areas, buffering and screening. The proposal will also improve the functionality of the intersections of 27th Avenue and Battle Creek Road SE with Kuebler Boulevard, where the applicant proposes pedestrian-friendly gateways to the proposed commercial development.

The effect on the property will be to develop the existing vacant land that was annexed into the City with the statement of intent that the land is contemplated for commercial uses. This annexation was approved by the people by a 72 percent popular vote.

Public services can be made available to the property at adequate levels to support the type of use proposed, and there are no unusual physical obstacles or special physical features that require consideration.

There will be no significant adverse effects on public facilities. Public facilities can be made available to the site at levels that will be adequate to serve the type of use proposed. The facility requirements of the uses will be reviewed by the City for conformance to standards prior to construction. All necessary public facilities and services will be provided at adequate levels to support the use. The actual facilities and services to be required will be specified through the building permit review process.

Factor 5:

The proposed use will benefit the public health, safety and welfare, by providing frequently used commercial services in closer proximity to the residential population than is currently available. This will result in fewer vehicle miles traveled, reduced travel times, less impact on the transportation system, and the opportunity to access those services without the use of a motor vehicle. Buffer yards and landscaping will be provided as specified by the Zoning Code for screening and separation from surrounding residential areas. All necessary public services and facilities are available to the property. The condition of the transportation system in the area will be enhanced by the improvements to the street system that serves the area, including the Battle Creek-Kuebler intersection, the Kuebler at 27th intersection, the widening of Kuebler to four lanes, and additional turn lanes at the southbound I-5 off ramp.

With the development standards for buffer yards and landscaping, specified street improvements, and appropriate connections to public facilities and services, the proposed development of the property will not create impacts that would be detrimental to the public health, safety or welfare.

Council finds that by balancing these factors, rezoning the property to CR is appropriate to supply commercial retail opportunities in an area that currently lacks such facilities as well as needed transportation and multimodal movement infrastructure.

Criterion 4: The extent of the consideration given to the various factors set forth in [criterion 3 above] will depend on the nature and circumstances of each individual case. Unless any of the factors is deemed relevant, something more than an unsupported conclusion will be required, but the degree of detail in the treatment of relevant factors will depend on the degree of proposed change or deviation and scale and intensity of the proposed use or development. The requisite degree of consideration is directly related to the provision of [criterion 1] of this section that the greater impact of a proposal in an area, the greater is the burden on the proponent.

The proposed use is a community level retail shopping center composed of no more than 240,000 square feet of gross leasable area on the subject property and no more than 299,000 square feet of gross leasable shopping center area and medical offices use over the 28.4 acre combined PacTrust and Salem Clinic properties, if developed together. This is the proposal and Council relies on it as such. Council has also conditioned its decision on the use ultimately being developed at these scales and no more.

The proposed change to CR has been contemplated for the area in various plans and in the annexation. Therefore, while the proposal is a change from residential to commercial, it is a logical change that supplies pedestrian destinations that are lacking in this residential area, supplies a means to bring the adjacent transportation system up to an adequate level of service, and for pedestrian and bicycle improvements. The appropriate use of the subject site is influenced by its location, by the transportation system in the vicinity, and by local travel patterns. Based on these factors, the CR (Retail Commercial) zone is appropriate for the location, and it will be consistent with the land use and development pattern in the area. The proposed Comprehensive Plan and zone change is consistent with the Plan methodology to consider changes to the use of land over time and in response to changes in conditions, and to the factors for considering a Zone Change which, as Council finds, weigh in favor of approval. Based on the changes that have occurred to the pattern, character, and conditions of the neighborhood and the community, the proposal satisfies the relevant zone change considerations.

SUMMARY

Council finds the evidence in the record supports approval of the proposal. As such, Council approves the proposal subject to the conditions of approval outlined in this decision.

EXHIBITS

Exhibit 1: Vicinity Map
Exhibit 2: Materials Submitted by Applicant
Exhibit 3: Salem Public Works comments concerning applicant's TIA
Exhibit 4: Comments from Oregon Department of Transportation

Exhibit 5:	Page 1 of Salem Public Works Development Bulletin Dated January 12, 2000
Exhibit 6:	Public Comments submitted as of the writing of the staff report
Exhibit 7:	September 2006 PacTrust Kuebler Project Traffic Impact Analysis
Exhibit 8:	November 14, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA
Exhibit 9:	December 4, 2006 Response to Public Comments from the November 21 Public Hearing
Exhibit 10:	December 19, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA
Exhibit 11:	June 1, 2007 Response to City Council Traffic Related Questions
Exhibit 12:	June 6, 2007 Response to Mr. John Miller Traffic Related Questions
Exhibit 13:	June 25, 2007 Response to Public Comments from the June 11 Public Hearing
Exhibit 14:	June 25, 2007 Response to DKS Associates Traffic Count Updates

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PLANNING COMMISSION
PLANNING DIVISION
555 LIBERTY ST. SE/ROOM 305
SALEM, OREGON 97301
PHONE: 503-588-6173
FAX: 503-588-6005
City of Salem AT YOUR SERVICE

RESOLUTION NO.: PC 06-19

COMPREHENSIVE PLAN CHANGE/ZONE CHANGE 06-6

WHEREAS, a petition for a Comprehensive Plan Change from

Developing Residential to Commercial

and zone change from

RA (Residential Agriculture) to CR (Retail Commercial)

for property located in the

2500 Block of Boone Road SE

was filed by

Pacific Realty Associates, L.P.

with the Planning Commission of the City of Salem, and

WHEREAS, after due notice, a public hearing on the proposed changes was held before the Planning Commission on November 21, 2006, at which time witnesses were heard and evidence received; and

WHEREAS, the record was held open until December 19, 2006 for additional written evidence and response; and

WHEREAS, the applicant was allowed until January 2, 2007 to provide final written legal argument; and

WHEREAS, the Planning Commission having carefully considered the entire record of this proceeding, after due deliberation and being fully advised; NOW THEREFORE

BE IT RESOLVED BY THE PLANNING COMMISSION OF THE CITY OF SALEM, OREGON:

Section 1. FINDINGS:

The Planning Commission hereby adopts as its findings of fact the staff report(s) on this matter dated November 21, 2006, herewith attached and by this reference incorporated herein.

Section 2. ORDER:

Based upon the foregoing findings and conclusions, it is hereby ordered:

(a) The proposed Comprehensive Plan change in this matter from Developing Residential to Commercial be granted;

(b) The zone change from RA (Residential Agriculture) to CR (Retail Commercial) for the above defined area be granted, subject to the following conditions:

(1) The intersection of Battle Creek and Boone Roads SE shall be improved to include a traffic signal with dedicated westbound left-turn lane, westbound right-turn lane and an eastbound left-turn lane. The southbound left-turn lane shall be lengthened to provide a minimum of 300 feet of storage.

(2) The intersection of Battle Creek Road SE and Kuebler Boulevard shall be improved to provide a northbound left-turn lane with a minimum of 350 feet of storage. To provide the necessary northbound left-turn storage at this intersection with the southbound left-turn lane storage at Battle Creek and Boone Roads, side-by-side left-turn lanes shall be constructed as approved by the Public Works Director.

(3) Kuebler Boulevard shall be widened to meet City of Salem Standards with curb, sidewalk and bike lanes. The widening shall extend from 1500 feet west of Battle Creek Road SE to the Interstate 5 ramps to provide two eastbound lanes.

(4) Dual left turn lanes shall be constructed on eastbound and westbound Kuebler Boulevard at 27th Avenue SE. Only one eastbound left-turn lane will be striped as there is only one receiving lane. For the westbound left turn lanes, an additional receiving lane shall be constructed which will drop as a right-turn only lane at the subject property's driveway on 27th Avenue.

(5) In addition to boundary street improvements required by Salem Revised Code (SRC) 77.150, the developer shall coordinate with the city and use best practices for design and location of site access and shall construct left-turn lanes and pedestrian refuge islands where appropriate.

(6) The developer shall commit up to $5,000 for traffic calming devices (such as speed humps or other traffic calming measures) to be used in the residential neighborhood south of the proposed development if a need is identified. The Neighborhood Traffic Management Program is the process used to identify traffic calming needs.

(7) The developer shall commit to one of the following actions, depending on whether site access is provided on Kuebler Boulevard.

(a) If no direct access to Kuebler Boulevard is provided, the developer shall construct an eastbound right-turn lane on Kuebler Boulevard at 27th Avenue.

(b) If a right-in access on Kuebler Boulevard is provided, the developer shall build a right-in access with a design that minimizes impact to through vehicles and provides a safe crossing for bicycle and pedestrian traffic. In addition, the developer shall complete the widening of the eastbound lanes of Kuebler Boulevard west to Commercial Street. This additional widening of approximately 1300 feet of Kuebler Boulevard is considered as payment for a grant of access on Kuebler Boulevard to allow a right-in driveway on the site.

(8) The developer shall offset their access driveway along Boone Road SE from Cultus Avenue at a location approved by the Salem Public Works Director.

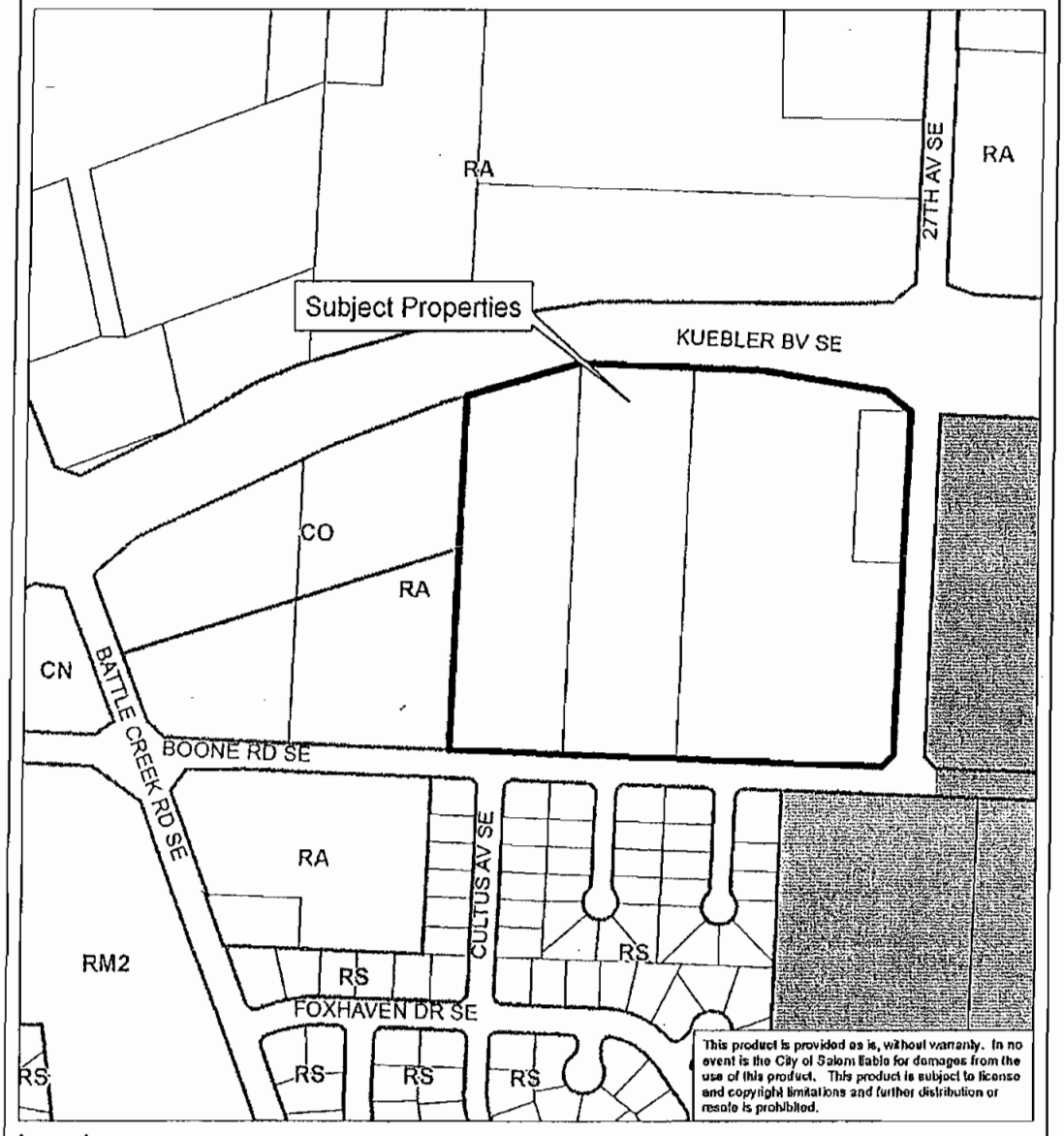
(9) The applicant shall establish a landscaped setback along the street frontages of the project area to provide buffering and screening from the street frontage. Along Kuebler Boulevard, the setback shall be a minimum of five (5) feet in depth from the property line, as required in the CR Zone, Salem Revised Code (SRC) 152.080. Along Boone Road SE and 27th Avenue SE, the setback shall be a minimum of fifteen (15) feet in depth where the project area lies opposite residential uses.

(10) The applicant/developer shall provide sidewalks along all street frontages. The sidewalks may be located inside the setback area as part of a landscape plan.

(11) The applicant/developer shall provide landscaping within the street frontage setbacks as required in SRC 132.

(12) The applicant/developer shall provide a brick or masonry wall with a minimum height of six (6) feet along the interior line of the landscaped setback along Boone Road SE and 27th Avenue SE, opposite residential uses. The applicant/developer may provide a landscaped berm within the setback in lieu of a wall.

Comprehensive Plan Change/Zone Change 06-6



Legend

- Base Zoning
- Urban Growth Boundary
- Outside Salem City Limits
- Taxlots
- Parks
- Schools

0 150 300 Feet

CITY OF Salem AT YOUR SERVICE
Community Development Dept.

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(13) The applicant/developer shall provide pedestrian access at all driveway entrances to the development. The pedestrian access way shall be distinct from the vehicular travel lanes by means such as striping, distinctive pavement, elevation, or other method that clearly distinguishes the area for pedestrian travel from vehicle travel.

(14) No more than 290,000 square feet of commercial retail space and no more than 24,000 square feet of medical office shall be allowed.

(15) All improvements shall be built as outlined and as set forth in the staff report, including widening of Kuebler Blvd. from the I-5 Interchange to Commercial Street and the "right-in" access from Kuebler to the property.

(16) No occupancy of the project shall be permitted until all transportation improvements are completed and installed.

ADOPTED by the Planning Commission this 6th day of February 2007.

President, Planning Commission

Appeal of a Planning Commission decision is to the Salem City Council (Council), as set forth in Section 114.200 of the Salem Revised Code (SRC). Written notice of an appeal and the applicable fee shall be filed with the Planning Administrator within fifteen days after the record date of the decision. Salem Revised Code 114.210 states that whether or not an appeal is filed, the Council may, by majority vote, initiate review of a Planning Commission decision by resolution filed with the City Recorder. Such a review shall be initiated prior to the adjournment of the first regular Council meeting following Council notification of the Planning Commission decision. Review shall proceed according to SRC Section 114.200.

APPEAL PERIOD ENDS: February 23, 2007

Copies of the staff report containing the Facts and Findings adopted by the Planning Commission are available upon request at Room 305, Civic Center, during City business hours, 8:00 a.m. to 5:00 p.m.

Planning Commission Vote: Yes 3 No 2 (Bennett, Wiles) **Abstained 2** (Dorn, Goss)

- Amending Packet -

FOR MEETING OF: November 21, 2006
AGENDA ITEM NO.: 4.2

NO PRODUCTION IN SIGHT

TO:	Planning Commission
FROM:	Glenn W. Gross, Urban Planning Administrator
STAFF:	Judith Moore, Senior Planner
HEARING DATE:	November 21, 2006
APPLICATION:	Comprehensive Plan Change/Zone Change 06-6
LOCATION:	2500 Block Boone Road SE; Marion County Assessor's Map Number T8S R3W S12 Quarter Section C, Tax Lots 1800, 1900, 2000 and 2100
SIZE:	Approximately 18.4 acres
REQUEST:	**To change the Salem Area Comprehensive Plan Map designation from "Developing Residential" to "Commercial" and to change the zoning from RA (Residential Agriculture) to CR (Commercial Retail) for an 18.4-acre site located in the 2500 Block of Boone Road SE.**
APPLICANT:	Pacific Realty Associates, L.P.
APPROVAL CRITERIA:	Comprehensive Plan Map Amendment: Salem Revised Code, Chapter 64 Zone Map Amendment: Salem Revised Code, Chapter 114
RECOMMENDATION:	**APPROVE the Comprehensive Plan/Zone Change, subject to the following Zone Change Conditions:**

(1) The intersection of Battle Creek and Boone Roads SE shall be improved to include a traffic signal with dedicated westbound left-turn lane, westbound right-turn lane and an eastbound left-turn lane. The southbound left-turn lane shall be lengthened to provide a minimum of 300 feet of storage.

(2) The intersection of Battle Creek Road SE and Kuebler Boulevard shall be improved to provide a northbound left-turn lane with a minimum of 350 feet of storage. To provide the necessary northbound left-turn storage at this intersection with the southbound left-turn lane storage at Battle Creek and Boone Roads, side-by-side left-turn lanes shall be constructed as approved by the Public Works Director.

(3) Kuebler Boulevard shall be widened to meet City of Salem Standards with curb, sidewalk and bike lanes. The widening shall extend from 1500 feet west of Battle Creek Road SE to the Interstate 5 ramps to provide two eastbound lanes.

(4) Dual left turn lanes shall be constructed on eastbound and westbound Kuebler Boulevard at 27th Avenue SE. Only one eastbound left-turn lane will be striped as there is only one receiving lane. For the westbound left turn lanes, an additional receiving lane shall be constructed which will drop as a right-turn only lane at the subject property's driveway on 27th Avenue.

(5) In addition to boundary street improvements required by Salem Revised Code (SRC) 77.150, the developer shall coordinate with the city and use best practices for design and location of site access and shall construct left-turn lanes and pedestrian refuge islands where appropriate.

(6) The developer shall commit up to $5,000 for traffic calming devices (such as speed humps or other traffic calming measures) to be used in the residential neighborhood south of the proposed development if a need is identified. The Neighborhood Traffic Management Program is the process used to identify traffic calming needs.

(7) The developer shall commit to one of the following actions, depending on whether site access is provided on Kuebler Boulevard.

(a) If no direct access to Kuebler Boulevard is provided, the developer shall construct an eastbound right-turn lane on Kuebler Boulevard at 27th Avenue.

(b) If a right-in access on Kuebler Boulevard is provided, the developer shall build a right-in access with a design that minimizes impact to through vehicles and provides a safe crossing for bicycle and pedestrian traffic. In addition, the developer shall complete the widening of the eastbound lanes of Kuebler Boulevard west to Commercial Street. This additional widening of approximately 1300 feet of Kuebler Boulevard is considered as payment for a grant of access on Kuebler Boulevard to allow a right-in driveway on the site.

(8) The developer shall offset their access driveway along Boone Road SE from Cultus Avenue at a location approved by the Salem Public Works Director.

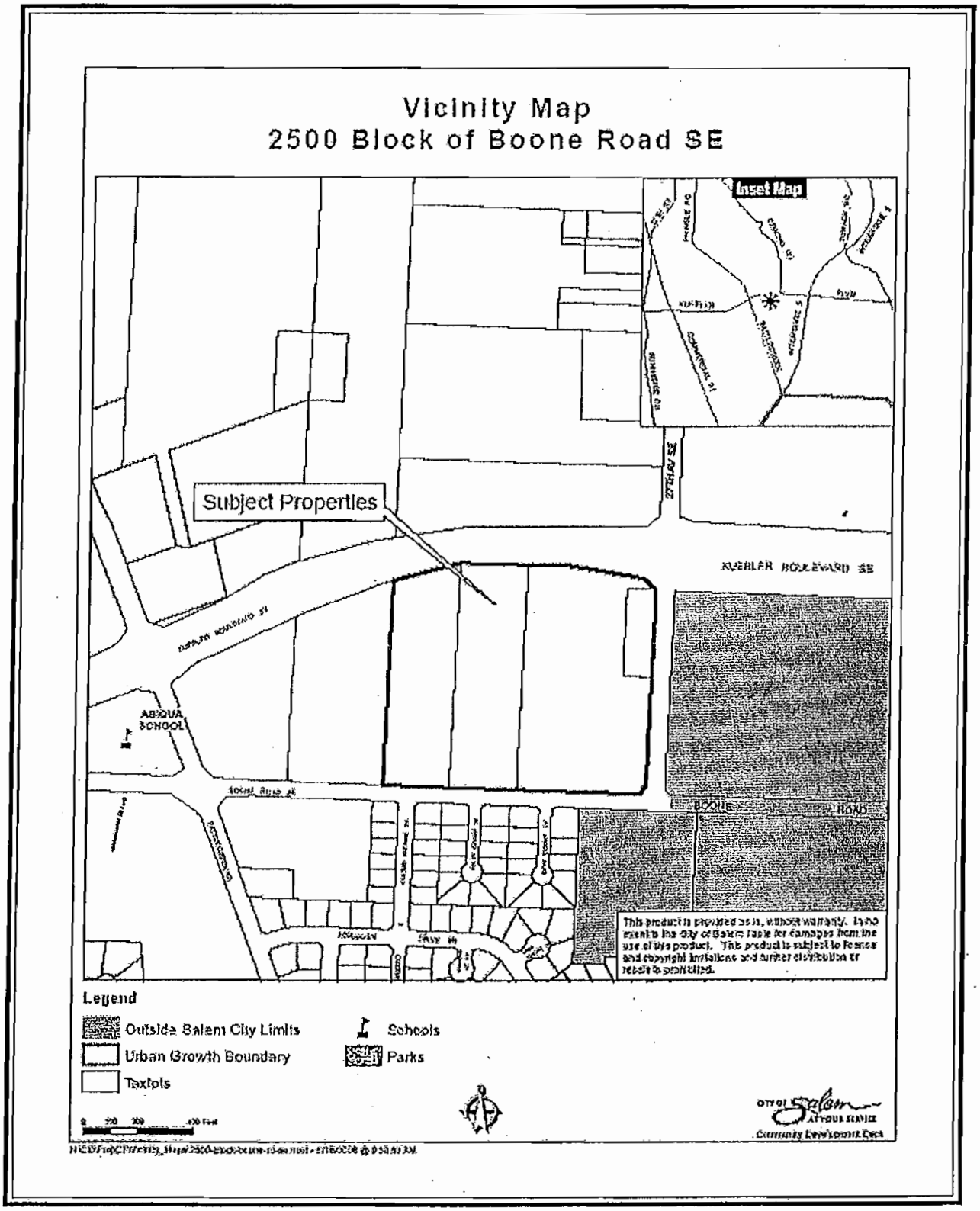
(9) The applicant shall establish a landscaped setback along the street frontages of the project area to provide buffering and screening from the street frontage. Along Kuebler Boulevard, the setback shall be a minimum of five (5) feet in depth from the property line, as required in the CR Zone, Salem Revised Code (SRC) 152.080. Along Boone Road SE and 27th Avenue SE, the setback shall be a minimum of fifteen (15) feet in depth where the project area lies opposite residential uses.

(10) The applicant/developer shall provide sidewalks along all street frontages. The sidewalks may be located inside the setback area as part of a landscape plan.

(11) The applicant/developer shall provide landscaping within the street frontage setbacks as required in SRC 132.

(12) The applicant/developer shall provide a brick or masonry wall with a minimum height of six (6) feet along the interior line of the landscaped setback along Boone Road SE and 27th Avenue SE, opposite residential uses. The applicant/developer may provide a landscaped berm within the setback in lieu of a wall.

(13) The applicant/developer shall provide pedestrian access at all driveway entrances to the development. The pedestrian access way shall be distinct from the vehicular travel lanes by means such as striping, distinctive pavement, elevation, or other method that clearly distinguishes the area for pedestrian travel from vehicle travel.



VICINITY MAP

APPLICATION PROCESSING

Subject Application:

On June 2, 2006, Jeff Tross, on behalf of Pacific Realty Associates, L.P., filed a Comprehensive Plan Change/Zone Change application to change the existing Salem Area Comprehensive Plan designation from "Developing Residential" to "Commercial" and the zoning from RA (Residential Agriculture) to CR (Retail Commercial) for use as a multi-purpose, retail/service/office center. The application was deemed complete on June 15, 2006.

Notice must be given in accordance with Section 114.050 to 114.070 of the Salem Revised Code. An approval by the Planning Commission (Commission) shall not be construed to have granted a variance from the provisions of any city ordinance unless the approval clearly states that a variance has been granted.

The quasi-judicial decision by the Planning Commission requires a decision be filed with the Planning Administrator and entered into the record of the proceedings within 30 days following the public hearing, unless the applicant consents to an extension for specific additional time. The Planning Administrator must record the date of the decision upon receipt of the decision. The Planning Administrator must also mail a copy of the decision to the applicant and to everyone who submitted verbal or written testimony during the process.

Appeals:

Appeal of a Planning Commission decision is to the Salem City Council (Council), as set forth in Section 114.200 of the Salem Revised Code (SRC). Written notice of an appeal and the applicable fee shall be filed with the Planning Administrator within fifteen days after the record date of the decision. Salem Revised Code 114.210 states that whether or not an appeal is filed, the Council may, by majority vote, initiate review of a Planning Commission decision by resolution filed with the City Recorder. Such a review shall be initiated prior to the adjournment of the first regular Council meeting following Council notification of the Planning Commission decision. Review shall proceed according to SRC Section 114.200.

120-Day Requirement:

Amendments to an acknowledged comprehensive plan are not subject to the 120-day rule (Oregon Revised Statutes (ORS) 227.178).

Public Notice:

1. The subject property was posted on November 9, 2006.

1. Notice was mailed to property owners within 250 feet of the subject property on November 2, 2006.

2. State law (ORS 197.610) requires the city to provide the Oregon Department of Land Conservation and Development (DLCD) a minimum 45-day notice when an applicant or the city proposes an amendment to an acknowledged comprehensive plan or land use regulation or to adopt a new land use regulation. The city sent notice of this proposal to DLCD on June 19, 2006.

Neighborhood Association Contacts:

The City notified the South gateway Neighborhood Association regarding the proposed CPC/ZC and as of the date of this report no formal comment has been received. The Neighborhood Association is scheduled to hold a meeting on November 16, 2006 to review the proposal.

Previous Actions:

A pre-application conference was held for the subject property on November 3, 2005 (File Pre-Ap 05-69).

BACKGROUND INFORMATION

Summary:

The applicant requests an amendment to the Salem Area Comprehensive Plan (SACP) Map to change the land use designation of the subject 18.4-acre property. The subject property is currently designated "Developing Residential" and the applicant requests changing the designation to "Commercial." Additionally, the applicant requests amending the Salem Zoning Map to modify the zoning district of the subject property from RA (Residential Agriculture) to CR (Commercial Retail).

The Marion County Assessor Map identifies the subject property as 083W12C, tax lots 1800, 1900, 2000 and 2100.

Public Comment:

Neighboring property owners were notified of the proposed subdivision by mail. As of the publication of this staff report, one neighboring property owner, a law office that represents "property owners surrounding the 18-acre site," and a transportation engineering firm submitted the following comments/concerns:

The law offices of Sherman, Sherman, Johnnie & Hoyt wrote to address "what appear to be fundamental problems with the TIA." They stated the applicant's TIA is "result oriented in nature," the traffic counts should be taken during appropriate peak periods, and thus the TIA is not reliable and must be disregarded. This law office hand delivered a second letter to the Planning Division on November 13, 2006, which contained a petition signed by 153 residents in opposition to the proposal.

Residents on Cultus Avenue SE commented with concerns if a four-way stop were to occur at the intersection of a driveway from the subject property and Cultus Avenue SE.

Transportation engineering firm DKS Associates submitted comments concerning the applicant's Transportation Impact Study (TIA). Issues raised include the applicant's traffic counts, access to Kuebler Boulevard, and establishment of a traffic signal at Boone Road SE and Battle Creek Road SE.

Staff Response: In discussions with staff, the applicant proposes to access Boone Road SE from the subject property west of Cultus Avenue SE. Staff proposes that as a condition of approval, in order to minimize traffic impacts to neighboring residences the applicant offset their driveway along Boone Road SE west of Coltus to a location approved by the Salem Public Works Director. Concerning the traffic count used in the applicant's TIA, neither ODOT nor Salem Public Works indicated any concerns with when the applicant conducted their traffic count.

DKS Associates raised concerns with other transportation-related issues. The TIA submitted by the applicant covers the entire project area, and not just the subject property. The project area includes the property abutting the east side of Battle Creek Road SE, between Kuebler Boulevard and Boone Road SE. Staff believes that the applicant's TIA provided a reasonable worst-case scenario for planning purposes of the project area. The DKS Associates letter also discusses the applicant's proposed access to Kuebler Boulevard. Parkways, as described in the Salem Transportation System Plan, have limited access. There are exceptions to this limitation, however, as stated in Salem Public Works' "Development Bulletin" dated January 12, 2000. As stated in the bulletin, "[u]ses permitted direct access are limited to major public and /or private developments generating traffic volumes of 10,000 or more vehicles per day." See Exhibit 6. Staff believes that through appropriate mitigation and conditions of approval on their proposed zone change, impacts to neighborhoods and surrounding transportation systems will be minimized. Recommended conditions of approval as they relate to transportation are discussed in this staff report and outlined in the Salem Public Works' letter dated November 11, 2006. See Exhibit 3.

City Department Comments

The City's Building and Safety Division commented that in Council Policy No. Y-2, dated November 20, 1989, Council directed staff to include a condition which precludes the installation of an outdoor advertising sign on all commercial or industrial zoned property for any future land use decision.

The Fire, Police, and Community Services Departments reviewed the proposal and had no objections to it.

Public Works Department submitted comments that respond to the applicant's TIA for the proposed commercial development. See Exhibit 3. These comments are summarized in applicable sections of this staff report.

Public Agency Comments

Salem-Keizer Transit reviewed the proposal and had no objections to it.

The Salem-Keizer School District reviewed the proposal and had no objections to it.

Initial comments from Oregon Department of Transportation (ODOT), Region 2, stated the TIA underestimates the impacts of the plan amendment to the transportation system. ODOT submitted a second set of comments in response to the applicant's revised Transportation Impact Analysis (TIA) submitted to the city, which indicate no objections to the project as long as certain conditions of development are met. See Exhibit 4.

Salem Area Comprehensive Plan (SACP) Designation

Land Use: The Salem Area Comprehensive Plan, effective November 2000, designates the subject property as "Developing Residential."

Land to the north (across Kuebler Boulevard SE) and east is designated "Developing Residential." Land to the south (across Boone Road SE) is designated "Single Family Residential," and land to the west is designated "Commercial."

Neighborhood Plan: The subject property lies within the South Gateway Neighborhood, which does not have a neighborhood plan adopted by the Salem City Council. Prior to 1995, the property was located within the Morningside Neighborhood boundaries, but Morningside's neighborhood plan adopted by the Salem City Council in June 1984 (Ordinance No. 67-84) does not include land east of Battle Creek and north of Boone Road SE.

Applicable Detail Plans:

Detailed plans are prepared as policy guides to the Salem Area Comprehensive Plan and are specific plans for a particular geographic area of the city, or for the provision or performance of some particular service or function.

Salem Transportation System Plan (Salem TSP): The Salem TSP uses a Street Classification System to determine the functional classification of each street within the city's street system. Three streets abut the subject property – Kuebler Boulevard SE to the north, Boone Road SE to the south, and 27th Avenue SE to the east. The functional classifications for the streets are Parkway, Collector, and Minor Arterial, respectively.

Zoning

Subject Property: Residential Agriculture (RA)

Surrounding Area: North, across Kuebler Boulevard SE – RA
South, across Boone Road SE – Single Family Residential (RS)
East, across 27th Avenue SE – Urban Transition (UT-10), outside city limits
Northeast, across Kuebler Boulevard SE and east of 27th Avenue SE – RA
Northwest – Commercial Office (CO)
Southwest – RA

Existing Land Uses:

Subject Property: Vacant, other than an unused house and barn located near 27th Avenue SE.

Surrounding Area: Developed with single-family dwellings to the south, a church to the north (across Kuebler Boulevard SE) and a church to the southeast (across Boone Road SE), and a private elementary school and office building within CN-zoned (Neighborhood Commercial) land across Battle Creek Road SE.

Existing Site Conditions:

The subject property is rectangular in shape, consisting of 18.4 acres (801,504 square feet). The property lies on ground that slopes to the northeast. The applicant's intent of the proposed Comprehensive Plan/Zone Change is, in conjunction with the 10-acre property directly west of the subject property, "establish a coordinated and unified retail, service, and office center to serve the major residential district that is emerging in the surrounding area." There are no curbs or sidewalks abutting the subject property. Based on the city's aerial photograph taken in 2005 of the subject property, off-street access for the property is located along Boone Road SE and 27th Avenue SE.

Site Plan:

A site plan is not required as part of a Comprehensive Plan Change/Zone Change application, and the applicant did not submit a site plan of the property that would show proposed use(s) within its boundaries.

Applicant Submittal Information:

An application for a Minor Comprehensive Plan Change must include a thorough statement addressing the approval criteria. Similarly, requests for a zone change must be supported by proof that it conforms to all applicable criteria imposed by the Salem Revised Code. The applicant submitted such statements and proof, which are included in their entirety as Exhibit 2 to this staff report. Staff utilized the information from the applicant's statements to evaluate the applicant's proposal and to compose the facts and findings within the staff report.

FINDINGS APPLYING THE APPLICABLE SALEM REVISED CODE CRITERIA FOR A COMPREHENSIVE PLAN AMENDMENT

Salem Revised Code (SRC) Section 64.040(g) defines a minor plan change as a single proceeding for amendment to the Comprehensive Plan affecting less than five privately and separately owned tax lots. This request is a Category 2 minor plan change, which is a quasi-judicial act. The burden of proof in meeting the approval criteria rests with the proponent of the change (SRC 64.090(a)). Salem Revised Code Section 64.090(b) establishes the approval criteria for Comprehensive Plan Map amendments. In order to approve a quasi-judicial Plan Map amendment request, the decision-making authority shall make findings of fact based on evidence provided by the applicant that demonstrates satisfaction of all of the applicable criteria. The applicable criteria are shown below in **bold** print. Following each criterion is a response and/or finding relative to the amendment requested. The applicant provided justification for all applicable criteria. See Exhibit 2.

The proposal must satisfy either Criterion 1A, 1B, or 2B. 2A.

Criterion 1: **A lack of appropriately designated suitable alternative sites within the vicinity for a proposed use. Factors in determining the suitability of alternative sites are limited to one or both of the following:**

(A) **Size: Suitability of the size of the alternative sites to accommodate the proposed use;**
or

(B) **Location: Suitability of the location of the alternative sites to permit the proposed use;**

Applicant's Statement:

1(A) The site for the proposed use requires the *Commercial* Plan designation. Unlike other land use categories such as "Residential" and "Industrial," the City has not predesignated land in order to maintain an inventory of vacant sites for future commercial development. Similarly, the City does not designate sites for commercial services in proximity to existing or newly developing residential areas, even though proximity to such services is a factor in determining the location of residential uses (Residential Development Policy 1.d.). As a result, a proposal to locate new commercial services in proximity to existing or developing residential areas typically requires an application to change existing land use designation. This is especially true in cases where the proposal is in response to the changing conditions of an area, as is the case here.

This proposal is to create a location for community and neighborhood retail, service, and office uses to serve the residential subarea in the vicinity of the Battle Creek-Kuebler Boulevard intersection in southeast Salem. This developing residential area includes lands located to the north and south of Kuebler Boulevard, to the east and west of Battle Creek Road, and extending to the east side of the I-5 interchange. Within this area there are extensive existing subdivisions, such as Cambridge Woods and Fox Haven, approved future developments including Sustainable Fairview, subdivisions that are undergoing development such as Nottingham Woods and Rock Ridge, and expansive tracts of vacant residential lands that are the subject of anticipated future development. Based on this existing and emerging residential pattern, the "vicinity" of the proposed project is the area within the city from east of Commercial Street to the east side of I-5, and from Madrona Avenue on the north to the city limits on the south.

The applicant indicated alternative sites similar in size to the subject property but none of these sites are within the property's vicinity and both are located within the northerly portion of Salem. The Pictsweet and Chemawa sites lie outside the city limits; Pictsweet on the west side of Cordon Road, north of State Street; and the Chemawa site lies north of Chemawa Road NE. Both of these properties are included in the city's vacant commercial land inventory. Measure No. 24-193, which is the Chemawa site, is an annexation proposal ballot measure for the November 7, 2006 General Election. There is no scheduled annexation date for the Pictsweet property.

The subject property lies along the north boundary of the South Gateway Neighborhood, which abuts the Morningside Neighborhood to the north. Southeast Mill Creek Neighborhood lies approximately 2,000 feet (0.37 miles) east of the east boundary of the subject property. Morningside Neighborhood encompasses approximately 2,100 acres (3.28 square miles), South Gateway Neighborhood encompasses approximately 3,241 acres (5.06 square miles), and Southeast Mill Creek encompasses approximately 5,793 acres (9.05 square miles). The majority of incorporated land within Southeast Mill Creek closest to the subject property, however, is not zoned for residential uses. Land within the urban growth boundary but outside the city limits and abutting the subject property currently contains single-family dwellings on large parcels or lies vacant.

The following two SACP Policies are applicable to location of commercial uses. Section IV (Salem Urban Area Goals and Policies), Subsection G (Commercial Development), Policy 4 (Community Shopping and Service Facilities) states:

> Community shopping and service facilities shall be located adjacent to major arterials and shall provide adequate parking and service areas. Land use regulations shall include provisions for siting and development which discourage major customer traffic from outside the immediate neighborhoods from filtering through residential streets.

Policy 5 (Neighborhood and Community Shopping and Service Facilities) states:

> Unless the existing development pattern along arterials and collectors commits an area to strip development, new commercial development shall be clustered and located to provide convenience goods and services for neighborhood residents or a wide variety of goods and services for a market area of several neighborhoods.

The size of the subject property could provide adequate parking and service areas. The property abuts Kuebler Boulevard, designated a "parkway" in the *Salem Transportation System Plan* (Salem TSP). Parkways were formerly called in the Salem TSP "beltline arterials." Battle Creek Road SE, which abuts the proposed project area, is designated a "minor arterial," and 27th Avenue as well as Boone Road SE are designated "collector" streets. Commercial Street SE provides "strip development" in contrast to the subject property and proposed project area that is rectangular in shape and could encompass clustered commercial development. The three neighborhoods identified are a market area for which the subject property, if developed with commercial retail and office uses, could serve.

The proposed Comprehensive Plan Map designation will expand the range of possible uses that are appropriate for this location. There is no pre-existing inventory of land designated for the commercial retail use. The character of the area defined by the applicant as being the "vicinity" of the proposed project, i.e., the area within the city from east of Commercial Street SE to the east side of I-5, and from Madrona Avenue SE on the north to the city limits on the south is primarily residential in nature. Land east of the subject property that lies outside the city limits is zoned Urban Transition (UT-10) by Marion County. Once annexed into the city, this land would be zoned for residential purposes. The same goes for land outside of the city located south of the subject property.

A portion of the South Gateway Overlay Zone, along the east 350 feet of Commercial Street is located within the applicant's defined "vicinity" of the proposed project. Commercial Street SE lies approximately one mile (~0.94 miles) west of the intersection of Battle Creek Road and Kuebler Boulevard. Land owned by the Salem Clinic that abuts the subject property to the west is the most western edge of the proposed project area. Salem Revised Code (SRC) 143E.010, "Intent and Purpose" states:

> The South Gateway Overlay Zone sets forth standards for development, redevelopment, and changes in land use along Commercial Street SE, to promote a variety of activities including multi-family residential, commercial and office uses in a manner consistent with the area's role as the southern gateway into Salem.

The South Gateway Overlay Zone, which includes "Commercial" and "Multifamily" designated lands, will accommodate some of the need for commercial uses in the proposed project's vicinity. The role of the overlay, however, is as the "southern gateway into Salem." The applicant's intent for the subject property is for use as a "community and neighborhood" level of mixed commercial uses and may be more aptly deemed the southeastern gateway to Salem. There is a need for other areas for commercial uses within south and southeast Salem, as the projected population growth for southeast Salem identified in the Salem TSP would increase 58 percent between 1993 and 2015 (Map 2, page 22, Salem TSP). This data is based on the *Salem Area Comprehensive Plan* (SACP) assuming southeast Salem is an area that will experience high growth.

There is the need and demand for more walkable places within neighborhoods, or pedestrian-oriented places. In order to facilitate alternative modes of travel to commercial areas other than motorized vehicles, it is important to provide commercial districts within or near developed and developing residential neighborhoods. Most of the land yet to be developed in the city is designated in the *Salem Area Comprehensive Plan* to become single family residential. The applicant proposes to provide a commercial area that is surrounded primarily by residential-designated land.

The subject property's location between two city neighborhoods and near a developable neighborhood (Southeast Mill Creek), could provide walking opportunities for the public and the business community. What makes a place walkable is dependent upon improved sidewalks, which do not exist around the perimeter of the property and proposed project area that includes the ten acres at the southeast intersection of Battle Creek Road SE and Kuebler Boulevard (Salem Clinic property). If this Comprehensive Plan/zone change is approved, practical design considerations and features must be implemented for this area.

The types of activities that could occupy the subject property and proposed development will need to conform to those allowed within the Commercial Retail and Commercial Office zoning districts, and all applicable buffering, screening, and setback requirements established in the Salem Revised Code between commercial and residential uses. Staff concurs with the facts presented by the applicant that there is a lack of appropriately designated suitable alternative sites within the vicinity for the proposed Comprehensive Plan Map amendment with concurrent Zone Change based on the suitability of the size and location, and thus Criteria 1(a) and (b) are satisfied.

or

Criterion 2: A major change in circumstances affecting a significant number of properties within the vicinity. Such change is defined to include and be limited to one or both of the following:

(A) **The construction of a major capital improvement (e.g., an arterial or major collector, a regional shopping center, etc.) that was unanticipated when the Salem Area Comprehensive Plan or elements of the Comprehensive Plan were adopted or last amended.**

(B) Previously approved plan amendments for properties in an area that have changed the character of the area to the extent that the existing designations for other properties in the area are no longer appropriate; and

Applicant's Statement:

None submitted.

Staff Findings:

The applicant satisfied criteria 1(a) and 1(b). Thus, it is not necessary that the applicant address criterion 2(b). This criterion is moot.

The subject property abuts vacant land zoned Commercial Office, and west of that across Battle Creek Road SE, is land zoned Neighborhood Commercial (CN) that contains an office building and a private school. All other adjacent areas are in or zoned for residential use. The proposed change from Single Family Residential to Commercial will provide an opportunity to provide a community level of mixed commercial uses for the subject property and proposed project site, which includes the Salem Clinic property west of the subject property. Development of the subject property will include the provision of buffering and screening between the residential uses located to the south and east of the subject property, the addition of landscaping within the proposed commercial uses' parking area, and the provision for pedestrian connections within the site from the adjoining streets.

Criterion 3: The proposed plan change considers and accommodates as much as possible all applicable statewide planning goals; and

Applicant's Statement:

The following Statewide Planning Goals apply to this proposal:

GOAL 1 – CITIZEN INVOLVEMENT

This application will be reviewed according to the public review process established by the City. Notice of the proposal will be provided to property owners and public agencies, published in the newspaper, and posted on the property. The notice will describe the nature of the request and the applicable criteria to be addressed. The Neighborhood Association will be asked to provide comments. A public hearing to consider the request will be held by the Planning Commission. Through the notice and public hearing process all interested parties are afforded the opportunity to review the application, comment on the proposal, and participate in the public hearing. These procedures meet the requirements of this Goal for citizen involvement in the land use planning process.

GOAL 2 – LAND USE PLANNING

The Salem Area Comprehensive Plan (SACP) is acknowledged to be in compliance with the Statewide Planning Goals. This proposal is made under the goals, policies and procedures of the SACP and its implementing ordinances, as well as the Statewide Planning Goals. A description of the proposal in relation to the methodology and intent of the Plan, its applicable goals and policies, the Comprehensive Plan Change criteria, the Zone Change considerations, and the Statewide Planning Goals, is a part of this report. Facts and evidence have been provided to support and justify the proposed Comprehensive Plan Change. For these reasons, the proposal conforms to the land use planning process established by this Goal.

GOAL 6 – AIR, WATER AND LAND RESOURCES QUALITY

The subject property is within the city, where development at an urban scale and density is intended to occur. The effects of using the site for commercial retail, service, and office activity on air, water and land resources will be similar to those of other similar commercial activities in the city. The effects of urban development are anticipated on lands that are within the city.

The major impact to air quality in the vicinity is vehicle traffic along Kuebler Boulevard and I-5. These are the major traffic routes in the area. Kuebler Boulevard is designated as a Parkway in the Salem Transportation System Plan (STSP), and as such is defined to carry 30,000 to 60,000 vehicles per day. I-5 is a Freeway, with a design capacity of 50,000+ vehicles per day. Under the "worst case" traffic impact scenario for the proposed use, as described in the [applicant's submitted] TIA, the site could generate 10,820 net new trips per day. As currently zoned, the site could generate an estimated 4,575 net new trips per day. The net increase over these two development scenarios is 6,245 vehicles per day. ("Pass-by" traffic, which is those vehicles that are already on the street, is expected to make up about a third of the estimated total traffic volume.) New traffic generated by the proposed use will be a part of the exceptionally high volume traffic that is already in this area. The proposed use itself will not create a significant air quality impact. Also, part of the traffic generated by commercial uses on the site will be in place of traffic that would otherwise have to travel to similar services located elsewhere, and at greater distance; therefore any impact to air quality will be relocated and not compounded.

The subject property will be provided with City sewer and water services. The City maintains a sewage treatment system and is responsible for assuring that wastewater discharges are processed to meet the applicable standards for environmental quality. Through the use of these facilities there will be no withdrawals of groundwater, or discharges of waste water directly to a water body. The site will be provided with a storm water detention and drainage system as specified by the City's adopted design and engineering standards.

The site is a vacant field. There are no identified significant natural resources on the site. Development of vacant urban land is expected. The proposed change will have no significant impact on the quality of the land.

Considering the location of the site within the city, the availability of public facilities to provide water, sewage disposal and storm drainage services, and the surrounding transportation system, the proposal will have no significant impacts to the quality of the air, water or land.

GOAL 9 – ECONOMY OF THE STATE

The proposed change to the Comprehensive Plan Map is to redesignate 18.4 acres from Single Family Residential to Commercial, for the purpose of providing a site for a community-neighborhood level retail and service center. Data required by this Goal to address the proposed change, as required by OAR 660-009-0015, is available in the "Economic Opportunities Analysis" (EOA) report of October 2004, prepared for the Salem Regional Employment Center-Mill Creek Industrial Park Project. The information provided by the EOA provides the most recent and comprehensive data available for economic development trends and for the inventory of commercial land within the urban area for the 20-year planning period.

The EOA presents data regarding national, state, regional and local employment trends. The national trend is for employment in retail trade, financial activities, professional and business services, health services, and other services, to increase (Table 1). The state trends follow the national trends, with employment in retail trade, finance, insurance and real estate, and services projected to increase (Tables 2 and 3). The increase in job growth in these sectors is tied to the projected increases and changes in the population (p. 7). Job growth specific to Marion and Polk

Counties is shown in Table 4, p. 9. This table shows an increase of 18,198 jobs from 2002 to 2012, with a large percentage of the new jobs occurring in the retail and service sectors (p. 8). Employment in the services sector is projected to at a faster rate than the other sectors (Table 4, p. 9).

The analysis in the EOA shows that employment in wholesale and retail trade within the urban area will likely continue to grow during the 20-year planning period. Within the Marion-Polk Counties region, employment in retail trade is projected to grow 1.4% between 2002 and 2012. Within the category of finance, insurance and real estate, employment is projected to grow 1.4%, and employment in services is projected to grow 2.2% (Table 4). These employment categories are among the highest average annual rates of employment growth that are projected. The proposed redesignation of the subject site will provide a location for expanded opportunities for employment in retail trade and services, consistent with this employment growth projection.

Although employment in retail trade and services is projected to increase, data provided in the EOA shows that there is a deficit of available commercial land within the city and UGB to accommodate the needs for the 20-year planning period. As shown in Table 6 (p. 13), the total city-wide inventory of available, vacant commercial land was 239 acres. As shown in Table 7, p. 14, there was only one parcel of commercial land twenty acres or larger, which is the size range of the project site. That parcel is a portion of the 120-acre "Picsweet" property, which is located outside of the city, in the northeast part of the urban area, at the northwest corner of State Street and Cordon Road (P. 13, and footnote 10).

[The Pictsweet] location is not in the "vicinity" of the subject property, and it is not situated to provide commercial services specifically to the residential area in the southeast part of the city. In addition to that site, there were three parcels in the 10-19.9 acre range, which is the range of the individual PacTrust parcel. The City zoning maps show no parcels in this range in the "vicinity" of the subject parcel, where they could provide services to the surrounding residential area. As a result, the addition of the Pac Trust property to the inventory of commercial land will provide for commercial services at a location that is not currently served by any existing, similar commercial site, and it will help to address the projected deficit of commercial land in the urban area.

In addition, the economic study identifies the siting requirements for "service center retail" to include "excellent visibility to attract drive-by users and adequate proximity to major roadways." The subject site is located along the major, high-volume roadway that serves southeast Salem, which affords it excellent visibility and accessibility to drive-by traffic. These factors are consistent with the locational characteristics defined for the intended use.

By providing a location for employment in the categories that are projected to increase within the planning period, and by providing an additional site for the development of these activities at a location where a similar site does not exist, the proposal serves to provide an opportunity for the economic activities that are vital to the citizens, which is consistent with the requirements of this Goal.

GOAL 10 – HOUSING

The subject site is currently designated *Developing Residential*, which indicates its intended future development for single-family housing. The site totals 18.4 acres. It is vacant land except for one single-family house, which results in a current housing density of one unit per 18.4 acres. This is far below an urban residential density, and the site currently is not a significant source of housing. The minimum lot size for single-family residential lots in the city is 4,000 s.f., which could provide for a density of 9.25 homes per net acre (43,560 s.f.-15%÷4,000 s.f.). SACP Part IV.B., General Development, policy 7 states an average residential density goal of 6.5 units per gross acre. As currently designated, using an average density of six homes per acre, the site would provide for

110 single family homes. PUD = 10/11 u/A = 180±

Redesignating the site as proposed will remove it from the inventory of vacant land intended for single-family housing. According to the City's 1997 Vacant Land Inventory Summary, the most recent year for which City inventory data is available, there were 12,016.26 acres within the Salem UGB designated for single family residential use. At an average density of six homes per acre, that acreage would provide for 72,097 single-family homes. According to the Mid-Willamette Valley Council of Governments (MWVCOG) 1994 housing forecast for the Salem/Keizer UGB, which was included as Table 5 in the 1998 City of Salem Data Report, a total of 68,760 single-family homes would be needed in the combined Salem/Keizer UGB by the year 2015. (The number of homes needed for Salem or Keizer individually was not provided.) Therefore, according to these figures, the inventory of vacant land for single-family homes that existed in the Salem UGB in 1997 could provide for 3,337 more single family homes than required by the housing forecast for the entire urban area. A reduction of 110 homes would still provide for 3,227 more homes than required by the forecast.

Since 1997, the ongoing development of single-family subdivisions has reduced the inventory of vacant residential land, while providing additional sites for single family homes. According to data available from the City, 1,175.56 acres have been included in single family subdivisions approved since 1997 (this includes land in the city of Salem as well as outside the city but in the Salem UGB). This information comes from the City's Data Reports, and from records of subdivision approvals. The 1998 Data Report shows a total of 143.9 acres, and the 1999 Data Report shows 138.3 acres, in approved subdivisions within the city and UGB. From records of subdivision approvals available on the Planning Division section of the City of Salem web site, subdivisions approved from 2000 to data have totaled 893.36 acres. From records of subdivision approval available at the Marion County Planning Department, subdivisions approved within the UGB from 2000 to data have totaled 43.2 acres. Based on these figures, 10,797.5 acres (12,016.26-1,175.56-43.2) remain in the vacant land inventory for single-family residential development.

The subject 18.4 acre site represents just .17% (.0017) of the land in the single family residential land inventory. The City and County records show the subdivisions approved from 1998 to date have created 5,280 single-family lots. Using the 1994 MWVCOG forecast for 2015 housing needs (combined Salem/Keizer UGB), the remaining number of needed single-family homes is (68,769-5,280) 63,489. At a density of six units per acre, the remaining vacant acreage (10,797.5) could provide for an additional 64,785 homes, which is 1,296 more than forecast. A reduction of 110 homes would still provide for 1,186 more homes than required by the forecast.

Since 1997 there have also been additions to the inventory of land for single family homes that are not included in the figures. Recent additions include CPC/ZC 05-4, Santiam Village, which added 9 acres of RS zoned land and 38 lots, and Sustainable Fairview project, which is planned to add approximately 1686 residential units. These recent additions to the single family residential inventory far exceed the reduction represented by this proposal.

Based on the available data, the inventory of land for single-family housing within the UGB remains adequate to meet the projected need, and the reduction of vacant land inventory represented by this proposal will not cause a significant impact on the ability to provide single-family housing within the urban area.

AMA 1800 ± 1800 A)

The availability of housing in the area around the subject property will also not be significantly affected by this proposed redesignation. In the area surrounding the subject site there are large tracts of vacant land designated for single-family residential use. On-going development to the north of Kuebler, west of Pringle Road, and to the south, south of Landau Street, has resulted in substantial numbers of new single family homes in the area. Redesignating the subject property will not significantly affect the ability of the City to provide single family housing opportunities in this

area.

For these reasons approval of the proposed Plan change will not have a significant impact on the ability to provide single-family housing within the UGB or in the local area, and the proposal does not adversely impact the requirements of this Goal.

GOAL 11 - PUBLIC FACILITIES AND SERVICES

The City maintains an infrastructure of public facilities and services to support urban development. The existing public services and facilities in the area, and those required to serve commercial uses on the subject property, were reviewed by the Public Works Department for the pre-application conference. The Public Works Department determined that public facilities and services can be made available to this site at adequate levels to provide for commercial uses. The City will determine the appropriate service levels, in keeping with adopted design standards and engineering practices, when development permits are requested. The facility extensions necessary to serve development on the property will be provided by the developer at the time of development, according to adopted City practices and requirements. In this manner the provision of services and facilities will be timely, orderly and efficient. By providing adequate levels of public services and facilities for the proposed use, the requirements of this Goal will be met.

GOAL 12 – TRANSPORTATION

The subject site is located along Kuebler Boulevard, Battle Creek Road, 27th Avenue, and Boone Road. Kuebler Boulevard is classified as a Parkway, Battle Creek is a Minor Arterial, 27th is a Collector, and Boone Road is a Collector, according to the Street Classifications Map in the STSP.

The City of Salem's Transportation System Plan (TSP) is in compliance with the requirements of this Goal. The relationship of the proposal to the transportation system, and its impacts, have been described in the Traffic Impact Analysis (TIA) prepared by Kittelson and Associates, "PacTrust Kuebler Project," April 2006. The TIA also examines the proposal according to the requirements of the Transportation Planning Rule (TPR), OAR 660-012-0060. The TIA is included as a part of the application. The TIA has determined that the impacts of the proposal on the transportation system can be mitigated with specific recommended improvements. Some of these improvements have already been identified in the STSP or by ODOT to address existing conditions, and are in progress or are in the process of receiving funding. Others will be provided as development occurs in the area. With the recommended improvements the function of the transportation system will be maintained at acceptable standards.

With regards to the requirements of the TPR, the TIA concludes that the identified improvements to the transportation system will mitigate the impacts of the proposal and ensure that adopted operating standards will be met. The analysis has found that the traffic impacts of the project will not cause a change in the functional classification of any street or transportation facility, will not require or result in changes to the standards that implement the functional classifications system, will result in traffic volumes that are consistent with the functional classifications of the affected streets, and mitigation will be provided to avoid further degradation in performance of specific identified elements of the transportation system. These findings are consistent with OAR 660-012-0060(3)(c).

As noted, Kuebler Boulevard is classified as a Parkway and Battle Creek is a Minor Arterial. These streets provide the site with access from within its urban market area. The location of the site relative to the surrounding residential neighborhoods, and its accessibility, will result in fewer vehicle miles traveled to obtain commercial services from the surrounding neighborhoods.

Battle Creek Road is a public transit route and is served by Salem Transit Route 22. Transit shelters can be provided along the property frontage at locations to be specified by the Transit District. Sidewalks will be provided along the streets bordering the project site, as required by City standards. Kuebler and Battle Creek are also designated bike routes.

Based on the existing street systems, access to the site by multiple modes of transportation will be direct and efficient. Vehicle traffic generated by a "worst-case" commercial development will be accommodated by improvements to the existing transportation system. No new streets are needed to serve the site or to connect it to the adjacent street network. With the recommended improvements the proposed use will not cause a level of service along a street or intersection to fall below acceptable standards. The site will be accessible by alternate modes of transportation including bicycle, transit and pedestrian. These factors conform to the requirements of the TPR.

For these reasons and the reasons presented in the TIA, the requirements of this Goal are met.

GOAL 13 - ENERGY CONSERVATION

The location of the property is central to the surrounding residential neighborhoods. The transportation system in this area makes access to the property direct, efficient and convenient, and its proximity to residential neighborhoods will reduce the vehicle miles traveled to access commercial services. Due to its location, and proximity to the surrounding neighborhoods, the site will be accessible using alternate modes of transportation. The site will provide commercial services that would otherwise require travel to more distant locations along the Commercial Street corridor. The location of the site and its use for commercial services promotes the conservation of energy needed for transportation. For these reasons the proposal will help to conserve energy and be energy efficient, in keeping with this Goal.

GOAL 14 – URBANIZATION

The subject property is inside the city. All required public facilities and services can be made available to the property. The site is currently vacant urban land. The use of the site as proposed will contribute to an efficient arrangement of land uses within the UGB, and to the efficient use of urban services, consistent with the directives of this Goal. The proposal does not affect the size or location of the Urban Growth Boundary.

For the facts and reasons presented, the proposed Comprehensive Plan Change is consistent with the applicable Statewide Planning Goals.

Staff Findings:

Oregon's 19 Statewide Planning Goals constitute the framework for a statewide program of land use planning. The Statewide Goals are achieved through local comprehensive planning. State law requires each city and county to have a comprehensive plan and the zoning and land division ordinance needed to put the plan into effect. Staff concurs with the applicant's statements concerning applicable Statewide Planning Goals.

In addition to the information presented by the applicant regarding Goal 1, the applicant presented their information to the South Gateway Neighborhood Association six times, and to the Morningside Neighborhood Association twice.

The city complies with Goal 2 requirements by establishing and maintaining a land use planning process. The SACP is acknowledged to be in compliance with the Statewide Planning Goals. The SACP provides goals, policies and procedures for reviewing and evaluating land use requests. City staff reviews the proposal in relation to the methodology and intent of the SACP, its applicable

goals and policies, the Comprehensive Plan Change criteria, and the zone change considerations. City staff evaluates the proposal based on facts and evidence provided by the applicant and other interested parties to either support and justify or recommend denial of the proposed change. The city's adopted land use planning process provides a framework for evaluating the proposal in keeping with the requirements of Goal 2.

The area surrounding the subject property is characterized by a mix of residential and neighborhood commercial activities. New uses on the property will take place within a commercial retail and office format. The property lies along an existing, major transportation route, Kuebler Boulevard, with access to another major transportation route, Battle Creek Road SE. The proposed Comprehensive Plan Map amendment from "Single Family Residential" to "Commercial" with concurrent zone change from RA (Single Family Residential) to CR (Commercial Retail) will not have an adverse impact on the quality of life within the neighborhood, as the subject property is buffered from adjacent residential uses by Collector Streets (27th Avenue SE and Boone Road SE), and a parkway (Kuebler Boulevard). The applicant stated commercial uses in the proposed development are neighborhood and/or community-related uses. The proposed Plan change will not create significant adverse impacts to the quality of air, water or land resource quality as a result of this proposal.

The major potential impact to the air in this area is from the vehicle traffic on Kuebler Boulevard and Battle Creek Road SE. The proposed Plan changes will not create an adverse impact on air quality due to vehicle traffic and will provide for pedestrian connectivity into the site from the residential uses in the neighborhood that would walk or bicycle to the site. The proposal does not result in a situation in which the carrying capacity of local or regional air, water, and land resources is exceeded or degraded. The proposal does not threaten the availability of local or regional air, water, and land resources.

The proposed action conforms to Statewide Planning Goal 9 as the request meets the specific guidelines to consider when planning for economic development. The requested change would increase local economic development. Community and neighborhood-related services would provide opportunities for people to work and live in close proximity to their residences and will provide more opportunities for residents in the neighborhood to be able to walk or bicycle to the services located within the site.

The applicant references *Salem Regional Employment Center Economic Opportunities Analysis* [EOA] (October 2004), a document prepared by the Planning Division of the Community Development Department. This document is available for review at the Planning Division. As the applicant stated, this document provides the most recent and comprehensive adopted data available for economic development trends and for the inventory of commercial land within the Salem urban area for the 20-year planning period.

Table 4 from the EOA is provided below. Table 4 shows the projected job growth specific to Marion and Polk Counties. It is predicted that the services sector of the economy of Polk and Marion Counties will grow at an average annual rate of 2.2 percent, the largest of any sector. Farm employment is not included with the other sectors listed, which include mining, construction, manufacturing transportation, communication and utilities, wholesale trade, and government.

Retail Trade; and Finance, Insurance and Real Estate comprise 27 percent of the job growth for the two counties. Services alone comprises 46 percent of the job growth. These three sectors combined comprise approximately 73 percent of the Polk-Marion County job growth to 2012.

Table 4. Marion and Polk Counties employment by SIC major industry sector 2002 and projected 2012						
Industry Sector	Number of Jobs		Numeric Change	Percent distribution of total non-farm employment		Average annual rate of change
	2002	2012	2002-2012	2002	2012	2002-2012
Total non-farm employment	137,837	156,035	18,198	100	100	1.2
Mining	268	281	13	0.2	0.2	0.5
Construction	6,463	7,245	782	4.7	4.6	1.1
Manufacturing	15,911	16,338	427	11.5	10.5	0.3
Transportation, Communication & Utilities	4,883	5,343	460	3.5	3.4	0.9
Wholesale trade	4,113	4,810	697	3.0	3.1	1.6
Retail trade	25,542	29,453	3,911	18.5	18.9	1.4
Finance, Insurance & Real Estate	6,906	7,933	1,027	5.0	5.1	1.4
Services	34,771	43,078	8,307	25.2	27.6	2.2
Government	38,980	41,554	2,574	28.3	26.6	0.6
SOURCE: Oregon Employment Department: Employment Projections by Industry 2002-2012: Oregon and Regional Summary, July 2003						

The EOA states the following concerning site requirements for commercial building and office employment centers, and service retail centers likely to expand or locate in Salem:

Commercial Building and Office Employment Center:

Outside of Salem's central business district, the minimum size required to accommodate a speculative office building is two acres. Many employers seek to locate in multi-building office employment centers, such [as] office parks, instead of isolated locations. Office centers provide heightened visibility, opportunities for shared services, and better access to amenities. For the Salem market, 20 acres would be desired for an efficient office employment center. This size parcel would accommodate four buildings of approximately 75,000 square feet each at a 0.35 FAR (floor to area ratio).

Sites should possess adequate visibility; central location relative to employees, customers, and support services; adequate proximity to major roadways; and flexibility to expand.

Service Center Retail:

Most non-"big box" retail shopping centers require 5 to 10 acres, without including demand from small users such as convenience marts and stand-alone restaurants.

Sites should possess excellent visibility to attract drive-by users and adequate proximity to major roadways (from Salem Regional Employment Center EOA, October 2004, pp. 11-12).

Staff concurs with the applicant's research regarding the city's inventory of vacant land intended for single-family development. The residentially zoned property, which consists of approximately 18.4 acres, that the applicant requests to change to a commercial designation will have little to no impact on the available single-family residential lands within the city's UGB. RECENT ANNEXATIONS = +300 A -

The applicant makes mention of the 120-acre Pictsweet property located inside the Salem UGB but outside the city limits as a location with 20 acres of land that is part of the city's commercial lands inventory. Pictsweet's conceptual plan was submitted with their request of the city to approve an outside service petition and agreement for the purpose of redeveloping the Pictsweet site as a multi-use development. This conceptual plan shows 20.42 acres for retail commercial, and 3.88 acres as commercial office. The Pictsweet site is approximately five miles northeast of the subject property.

The applicant also mentions the former state-run Fairview Training Center, a 245-acre site in southeast Salem within the Morningside Neighborhood that lies approximately one-half mile north of the subject property. The city adopted two ordinances relating to Fairview to incorporate mixed used development designations in the SACP and Salem Revised Code. The Fairview property was formerly designated "Community Service" and zoned PH (Public and Private Health Services) prior to its current designation of "Mixed Use" and "Fairview Mixed Use" zoning. According to Sustainable Fairview Associates, applicants for the Fairview mixed use development, as many as 2,000 residential units are proposed for the Fairview property, as well as employment and commercial land uses.

The subject property is located outside the Salem Urban Service Area, and an Urban Growth Area Development (UGA) Permit is required. A UGA Permit requires an applicant to provide linking and boundary facilities to their property under the standards and requirements of SRC Chapter 66. Public sewer, water, and storm drain services can be provided to the subject property. Connections to the adjacent sanitary sewer, water and storm drain facilities will be required at the time of development of the property. The city treats sewage to meet the applicable standards for environmental quality. Surface water runoff will be collected and discharged to the public storm drain system.

Public facilities and services, i.e., water, sewer, storm drainage will need to be connected to the site. Salem Public Works submitted comments subsequent to a pre-application conference held October 20, 2005 concerning the property and connections to public facilities and services (File Pre-Ap 05-69). The applicant shall be required to design and construct a complete storm drainage system at the time of development. The applicant shall provide an analysis that includes capacity calculations, detention requirements, and evaluation of the connection to the approved point of disposal (SRC 63.195). An Erosion Control Permit from the City of Salem is required prior to the start of any ground disturbing activities as specified in SRC Chapter 75. A drainage ditch runs along Battle Creek Road SE along the full frontage of the subject property. A drainage ditch runs along Kuebler Boulevard SE adjacent to the subject property, and a drainage ditch runs along the development side of Boone Road SE. There are 15- and 30-inch storm drain lines on the opposite side of Boone Road SE from the property; and a 30-inch storm drain line runs along 27th Avenue SE that outfalls into a drainage ditch adjacent to the subject property.

The applicant shall link the proposed development to adequate water facilities; and link the development to adequate sewer facilities. There is a 24-inch public sewer line within a 25-foot easement along the south right-of-way line of Boone Road SE; and a 24-inch public sewer line in 27th Avenue SE. There is no sewer available in Kuebler Boulevard SE and Battle Creek Road SE.

The applicant shall be required to provide separate sewer services for each lot (SRC 73.075) at the time of development. Any existing septic tank systems shall be abandoned (SRC 73.100).

The subject property is within two water service levels: S-1 and S-2. There are no facilities available to serve the S-1 water service level. There are no public water lines in Battle Creek Road SE and 27th Avenue SE. There is a ten-inch S-2 water line in Kuebler Boulevard SE and a 24-inch S-2 water line in Boone Road SE. As a condition of water service, all developments shall be required to provide public water mains of sufficient size for fire protection. At the time of development, water meters shall be placed along the right-of-way adjacent to the subject property (City of Salem Policy and Procedure WA 2-7). Each lot shall have an independent water service from the meter to the lot (SRC 72.093).

The subject property borders four roadways: Kuebler Boulevard to the north, which is designated a parkway in the Salem TSP; 27th Avenue SE to the east, a Collector; Boone Road SE to the south, a Collector; and Battle Creek Road SE to the west, which is designated a minor arterial and not part of the Comprehensive Plan Change but part of the proposed project area. The intersection of Kuebler Boulevard and Battle Creek Road SE is controlled by a traffic signal. Public transit service is available on Battle Creek Road SE. The transit and bicycle facilities on Battle Creek Road and Kuebler Boulevard SE provide transportation alternatives to the private auto to reach the subject property, and together with the sites' accessible locations from the appropriate abutting streets will serve to reduce vehicle miles traveled within the urban area. Pedestrian connections will be provided as part of the development of the project area bordered by the four roadways.

Battle Creek Road SE has a varied turnpike improvement within a 68-foot right-of-way. The street is designated a minor arterial in the Salem TSP. The standard for this street classification is a 46-foot wide improvement within a 72-foot wide right-of-way. There is a slope easement along the full frontage of Battle Creek Road SE adjacent to the subject property. Additional right-of-way dedication will be provided on Battle Creek Road SE to accommodate future widening improvements. The applicant shall make improvements to Battle Creek Road SE that include constructing a minimum 23-foot wide half-street improvement on the development side. These improvements shall include street lights and sidewalks on the development side.

Kuebler Boulevard SE has a varied turnpike pavement section within a varied right-of-way of 180 feet to 150 feet in width. The street is designated as a parkway in the Salem TSP. Access control is limited to one-mile intervals (PWDS Development Bulletin No. 34). The intersection with Battle Creek Road SE is signalized. There is a proposed project to widen Kuebler Boulevard SE to five (5) lanes from I-5 to Battle Creek Road SE. At the time of development, an evaluation of required improvements will be determined. Boundary street improvements shall be required along Kuebler Boulevard SE adjacent to the subject property.

Boone Road SE has a 12-foot turnpike improvement on the development side and a 17-foot street improvement on the opposite side within a varied right-of-way of 68 feet to 60 feet in width. The street is designated a collector street in the Salem TSP. The standard for this street classification is a 34-foot wide improvement within a 60-foot wide right-of-way. The applicant shall construct a minimum 17-foot wide half-street improvement on the development side (SRC 66.100(c) - SRC 63.235). These improvements shall include street lights and sidewalks on the development side.

Twenty-seventh (27th) Avenue SE has a 12-foot turnpike improvement on the development side and a 17-foot half street improvement on the opposite side within a varied right-of-way of 60 feet to 68 feet in width. The street is designated as a collector street in the Salem TSP. The standard for this street classification is a 34-foot wide improvement within a 60-foot wide right-of-way. Alignment of the Boone Road SE and 27th Avenue SE intersection may need modification to improve traffic flow. Sufficient right-of-way shall be dedicated at collector street intersections to provide a 25-foot property line (turn) radius (PWDS Streets 2.15). The applicant shall construct 17-foot wide half-

street improvement on the development side and a 17-foot wide turnpike lane on the opposite side of centerline, along the full frontage of the subject property (SRC 66.100(c) - SRC 63.235). These improvements shall include street lights and sidewalks on the development side. A minimum of 200 feet on center is required between (collector or arterial) street intersections and driveways.

The applicant provided a summary of the project area's "prior land use and transportation history" as part of their submitted application (Applicant Submittal, pages 7 through 10). It is worth noting the previous reports concerning this area of the city identify the area of the subject property as a place with potential to provide opportunities for people to live, work and shop in close proximity (Kampe Associates, 1994); a "community service node which provides community scale office and service-oriented uses with limited I-5 services" (City of Salem Southwest Quadrant Overlay Zone (Staff Report), 1996); and as an area to provide neighborhood services to "surrounding and regional residential uses (Salem Futures). Pages 11 through 13 of the applicant's narrative summarizes the specific relationship of their request to the transportation system and its project impacts that is detailed in their submitted Transportation Impact Analysis (TIA).

Salem Public Works requested additional analyses for the submitted TIA, and the applicant submitted a revised draft in October 2006. Public Works' comments concerning the revised TIA are attached to this staff report as Exhibit 3. Oregon Department of Transportation (ODOT) submitted comments following review of the applicant's initial TIA. Revised comments from ODOT in relation to the revised TIA are attached as Exhibit 4.

Based on the proposed mitigation, i.e., improvements to adjacent roadways required as part of development of the subject property, the change in the land use designation for this developed property will not cause a significant impact on the existing transportation system, or result in the level of service decreasing to an unacceptable level. The requirements of Goal 12 (Transportation) are met because the recommended conditions are in keeping with the requirements of the [TSP]. The proposed changes to the subject property will not have a significant impact on the existing transportation facilities, and development of the project area can occur in such a manner as to be consistent with providing a safe and convenient transportation system.

The location of the site along Kuebler Boulevard, a parkway, and the availability of public transit and bicycle transportation to the site makes the site highly accessible and serves to reduce the energy needed to reach the site. These factors result in the site being consistent with the energy conservation requirements of this Goal.

The subject property lies within the city limits yet it is undeveloped except for outbuildings and two single-family dwellings. The proposal is consistent with the intent of this Goal to maintain a compact and efficient urban area. The proposal does not affect the Urban Growth Boundary. Based on the findings presented above and the applicants proposed findings, this criteria has been met.

Criterion 4: The proposed change is logical and harmonious with the land use pattern for the greater area as shown on the detailed and general plan maps.

Applicant's Statement:

As shown on the Plan map the land use pattern for the greater area consists largely of residential land. There are two areas of commercial land, the Abiqua School and the Salem Clinic sites, and an area of industrial land located east of I-5, outside the city. The residential lands include developed single-family neighborhoods, newly developing subdivisions, and large tracts of vacant land. The vacant residential lands in the greater area have the potential for an estimated 3386 new single family homes. The primary street system that serves this area is also part of the land use pattern. This includes Kuebler Boulevard, Battle Creek Road, I-5, and the Kuebler/I-5 interchange.

The subject property is vacant land currently designated for single-family residential use. However, it is centrally located to the surrounding residential lands, it fronts along the primary city streets that serve the area, and it is just west of the interchange. There are no commercial services east of Commercial Street that serve this residential area, which results in motor vehicle travel from this area to Commercial Street, with impact on the Kuebler at Commercial intersection. As additional residential development occurs, this impact will increase.

By contrast, commercial uses on the subject property will be accessible from the surrounding residential neighborhoods without significant impact on Kuebler or the Kuebler/Commercial intersection, and by alternate modes of transportation. The proposed change to allow commercial uses on the subject property is logical with the land use pattern for the greater area because of the proximity of the site to the surrounding residential areas, its location relative to these residential lands and the transportation system, and with regards to its accessibility from the surrounding neighborhoods by use of alternate modes of transportation.

Similarly, the proposed change is harmonious with the land use pattern for the greater area because of its location and proximity to the surrounding residential area, its accessibility by alternative modes of transportation, and because it is located along the major city streets that serve the area. The location of the site provides an alternative to the Commercial Street corridor. This will reduce impacts on Kuebler and at the Kuebler at Commercial intersection. Its proximity to the surrounding residential area will reduce the travel distance to reach commercial services. The accessibility of the site provides the opportunity to reduce the use of motor vehicles to reach commercial services. The site is not adjacent to any "local" streets, and the use of local streets is not necessary in order to reach the site. The location along the major street system, the opportunity to reduce the distance to commercial services, and its accessibility by alternate modes of transportation, make the proposed change harmonious with the land use pattern of the greater area.

Based on the factors, the proposed change will be logical and harmonious with the land use pattern for the greater area, and this criterion is satisfied.

Staff Findings:

Staff concurs with the facts presented by the applicant. Changing the designation of the property from "Developing Residential" to "Commercial" to allow commercial uses on the subject property will provide commercial services to the neighborhood that are closer than the Commercial Street commercial development that lies approximately one mile from the subject property. The proximity of the subject property to the residential neighborhoods north and south of it provides the opportunity for persons going to the property to use alternative modes of transportation such as walking and bicycling to reach the subject property. Furthermore the presence of transit allows for the connection to the proposed development via the transit system.

The current development pattern in the area of the subject property along 27th Avenue SE, Boone Road SE, and Battle Creek SE is primarily residential in nature except for the 2.19 acres of land zoned CN (Neighborhood Commercial) on the west side of Battle Creek Road SE ("Abiqua School" property), the CO (Commercial Office) zoned land owned by the Salem Clinic that abuts the subject property, a church on the south side of Boone Road SE, southwest of the property; and a community church on the north side of Kuebler Boulevard and west of 27th Avenue SE. The applicant stated that the Salem Clinic land is part of their larger commercial development project for the southeast corner of Kuebler and Battle Creek Road SE.

The subject property is designated on the Salem Area Comprehensive Plan map as "Developing Residential." Land to the north across Kuebler Boulevard is zoned RA (Residential Agriculture) and contains single-family residences on individual lots as well as vacant parcels. Eleven acres of land

west of 27th Avenue SE on the north side of Kuebler Boulevard contains a community church, buildings used for church purposes and church parking. The property directly to the west of the subject property, which is owned by the Salem Clinic, is designated "Commercial." Land south of the property, on the south side of Boone Road SE contains single-family lots that are part of the Pringle Estates Phase 1 subdivision and is designated "Single Family Residential." Land east and southeast of the property lies outside of the city limits and is designated "Developing Residential." Land directly east is a vacant, 25-acre parcel and land southeast of the property contains a single-family dwelling on a large (5.52 acres) parcel. Across Battle Creek Road SE from the subject property, on the southwest corner of Battle Creek Road SE and Kuebler Boulevard, is a 2.19-acre parcel designated "Commercial," which contains an office building and a private school (Abiqua School).

Buffering and screening will be provided between the residentially zoned properties and the subject property. Staff finds that the proposed change is logical and harmonious with the land use pattern for the greater area as detailed in the applicant's statement and the findings provided above.

Criterion 5: The proposed change conforms to all criteria imposed by applicable goals and policies of the comprehensive plan in light of its intent statements; and

Applicant's Statement:

The proposal conforms to the applicable goals and policies of the Comprehensive Plan as follows:

Part II. Definitions and Intent Statements

A. Comprehensive Land Use Plan Map

1. Intent:

As described in Part II.A.1 of the Plan, its intent is to project the goal of the most desirable pattern of land use in the Salem area, taking into account various factors such as the transportation system, location of public facilities, and the needs of the people which are important to the creation and maintenance of a healthful and pleasing urban environment. The Plan map demonstrates a commitment that land for a wide variety of uses will be available at appropriate locations as needed. The chosen method of meeting this commitment is through the phased provision of land for various uses over time, through annexation and rezoning in response to demand for specific land uses. The Plan recognizes the need to remain responsive to changing and evolving land demands within the context of plan policies and implementing measures. The intent of this approach is to retain flexibility in order to remain responsive to changing conditions, and to recognize the legitimacy of existing zoning and plan implementation. The Plan recognizes that land use and zoning are expected to change as conditions change.

This proposal is made in conjunction with the evolving and emerging pattern of land use and development that is occurring in southeast Salem. It takes into account the relationship of the subject property to the existing transportation system, and to the improvements to the transportation system that are planned and that will be required to support expected development in the area. The proposal is consistent with the intent of the Plan to provide for the appropriate variety of land uses at an appropriate location, in response to changing conditions in the area. The proposal is made in the context of the plan policies and implementing measures. It is also in keeping with the stated intent of the Plan to remain flexible and responsive to changing conditions, to provide for the phased provision of land for various uses over time, and with the expectation that land use and zoning will change in response to changing conditions.

The on-going changes to the character of the area, in particular the intensification or residential development and the improvements to the transportation system, support the proposed Plan change. These changes in the conditions of the area affect the appropriate use of the subject property, and support flexibility in the application of the Plan designation. The proposed *Commercial* designation is consistent with the intent to respond to the changes in land use that are occurring, and to provide for the phased provision of land through rezoning, over time, as conditions change. For these reasons, the proposal is consistent with the intent and methodology of the Plan.

A.3. Plan Map Designation

b. Commercial

The site is proposed to be designated *Commercial* on the Plan map. As described in the Plan, the intent of the *Commercial* designation is to provide for the full variety of shopping and service opportunities found throughout the urban area. It includes the category "Community and Neighborhood Shopping and Service Facilities," which is defined to include convenience goods for neighborhood residents and community scale facilities for a market area of several neighborhoods. The subject site is intended to serve a market area of several neighborhoods, which includes the surrounding area to the north and south of Kuebler, including the impending Fairview project, and the residential lands located in the UGB east of I-5. The proposed use is consistent with the category of commercial activity that is provided for in the Plan.

Part IV. Salem Urban Area Goals and Policies

B. General Development Goal: To insure that future decisions concerning the use of land within the Salem urban area are consistent with State Land Use Goals.

The relationship of this proposal to the State Land Use Goals has been addressed in this report. The proposal has been shown to conform to the applicable State Land Use Goals, consistent with this Goal.

Policies:

3. Economic Growth: Economic growth which improves and strengthens the economic base of the Salem area should be encouraged.

The proposal is to provide a commercial center for the residential neighborhoods in the southeast part of the city. Intended uses include retail, service, and office activities. Employment in these sectors is projected to grow. By providing opportunities for the sectors of the local economy that are projected to grow, the project will improve and strengthen the economic base of the urban area, which is consistent with this policy.

6. Carrying Capacity: All public and private development shall meet the requirements of applicable local, state and federal standards.

Development of the site will require confections to public facilities to provide for utility services. Public facilities are available at this location at adequate levels to serve the proposed use. The City's utility services are required to meet all applicable local, state and federal standards. By utilizing public services at the levels specified by the City, the proposal will operate within the carrying capacity of the land and the available public services.

7. *Optimal Use of the Land: Structures and their siting in all residential, commercial, and industrial developments shall optimize the use of land . . . Development should minimize adverse alteration of the natural terrain and watercourses, the potential for erosion and adverse effects upon the existing topography and soil conditions.*

Development of the site can optimize the use of the land by providing a development density so that a range of services are provided at this location. The use of the land can also be optimized through efficient on-site circulation, specified and limited points of access to the adjacent streets, by providing for access from alternate modes of non-motorized transportation, and by planning for transit access. It can also optimize the use of the land by providing setbacks and buffers from adjacent residential lands, and by maintaining appropriate setbacks form adjacent streets.

Required parking and driveway circulation, and setbacks and landscaping, will be provided on the site. The site presents no special or unusual terrain features that will be adversely affected or that will present unusual terrain features that will be adversely affected or that will present unusual obstacles to development. There are no watercourses within the site. The development as proposed will have no unusual effects upon the existing topography or soil conditions at the site, other than grading and site preparation that is typical for building construction. Based on these factors, the proposed use will optimize the use of the land in keeping with this policy.

12. *Development Compatibility: Land use regulations which govern the siting of any development shall encourage development to reduce its impact on adjacent properties by screening, landscaping, setback, height, and mass regulations.*

The site can be designed and developed for compatibility with nearby uses through zoning categories and measures including setbacks, screening and landscaping. Residential uses are at present located only to the south, across Boone Road. The north half of the Salem Clinic property is already zoned CO, which provides for office uses directly across Battle Creek from the commercial office uses in the CN zone. The land slopes from Battle Creek Road to the east, and the lands to the west and south of the PacTrust site are generally at a higher elevation. Due to the difference in elevations, screening of the site from street level can be effective, and lands at higher elevation will have views of the site.

Because the combined site is surrounded by streets there will be no common boundaries between the commercial uses and residential activity. The south side of the site can be buffered and screened from the residential uses across Boone Road. With measures as provided in the Zone Code for buffers and screening, and the limitation and specification of access points that will occur at or before the time of development, development of the site can be made compatibility with the surrounding land uses.

14. *Screening of Storage: Outdoor storage areas should be screened from the public streets and from adjacent uses.*

Any outdoor storage areas will be screened in accordance with the standards that apply to such screening.

15. *Lighting: Exterior lighting shall be designed to provide illumination to the site and not cause glare into the public right-of-way and adjacent properties.*

Any outdoor lighting included as a part of the project will be designed to illuminate the site, to provide safety and security for the premises, and to meet the standards required by the zone code to prevent glare into the public right of way or adjacent property, consistent with this policy.

There is no other similar commercial development in the vicinity, and the area is not committed to strip development. Development of the subject site will form a single commercial service cluster that is located to serve the surrounding neighborhoods. The site is bordered by four streets, which are Kuebler Boulevard, Battle Creek Road, Boone Road, and 27th Avenue. Development will be confined within the boundaries presented by these streets. The depth of the property from the major frontage along Kuebler Boulevard avoids formation of a strip development pattern along that frontage. The CN zoning at the southwest corner of Kuebler and Battle Creek is the only other commercial zoning along either major street. Due to its location adjacent to the arterial streets that serve this part of the urban area, and the nature of the transportation system that serves the location, the site is appropriately located to provide services for neighborhood residents as well as a market area of several southeast Salem neighborhoods. For these reasons the location of the site is consistent with this policy.

8. *Buffer strips from residential uses shall be provided for all commercial development.*

Single-family residential neighborhoods are located to the south of the subject site, across Boone Road. The bufferyard setback, screening and landscaping requirements of SRC Chapter 132 will apply to the site to provide the required buffer. A sight-obscuring fence or wall can be provided along the property lines, as required. The Zone Code requirement for bufferyards and screening as a development standard serves to address this policy.

E. *Residential Development Goal: To promote a variety of housing opportunities for all income levels and an adequate supply of developable land to support such housing.*

As noted, the site is designated *Developing Residential* for future single family housing. However, as described under LCDC Goal 10, there will be adequate land for additional single family housing within the UGB after this 18.4 acre site is removed from the inventory. In summary, the site constitutes .17% of the existing inventory of vacant land for single family housing, and the remaining inventory is adequate to provide for the forecast need for single family housing through the year 2015. Recent additions to the inventory, including the Fairview project, have significantly increased the future opportunities for single family housing. In addition, there are extensive tracts of vacant land in the area surrounding the site that are designated for single family residential use. As a result of these factors, redesignating the subject property as proposed will not have an adverse effect on the ability to provide a variety of single family housing opportunities in the city, within the UGB, or in this local area. For these reasons the proposal does not affect the Residential Development goal.

For the reasons, factors, and circumstances presented, the proposal conforms to the criteria imposed by the applicable goals and policies of the Comprehensive Plan in light of its intent statements, and this criterion is satisfied.

Staff Findings:

Staff concurs with the facts presented by the applicant as stated above and concludes that the applicant's petition for an SACP Map amendment satisfies approval criterion (5). The proposal is consistent with all applicable goals and policies of the Salem Area Comprehensive Plan (SACP).

The proposed Comprehensive Plan Map amendment from Single Family Residential to Commercial is based upon the applicant's intent to provide a commercial center for the residential neighborhoods in the southeast part of the city. The proposed development will provide commercial opportunities and employment that could improve and strengthen the economic base of the Salem urban area. As part of the proposed development, there would be improvements to all roads abutting the property – Battle Creek Road SE, Kuebler Boulevard, Boone Road SE, and 27th Avenue SE. Improving transportation systems and enhancing the visual feel of the area with

landscaping tend to provide incentive for future development and continued economic vitality within the same general area.

The future redevelopment of the site will conform to all applicable state and federal standards. Facilities necessary to serve persons with disabilities will be required with development of the property to meet current standards. Policy 6, Carrying Capacity, can be met at the time of development.

There are no special or unusual terrain features on the property. Adverse impacts to the adjoining residentially zoned property can be minimized by the use of buffering and screening between the commercial uses and related parking areas on the subject property and the nearby single family homes. Policy 7, Optimal Use of the Land, can be met at the time of development.

Policy 11 considers handicapped access: "Building facilities open to the public should be well designed to fulfill their specified function, taking into consideration the needs of handicapped persons." Any commercial development must take the needs of disabled ("handicapped") persons into consideration. All parking and other access requirements must meet Americans with Disabilities Act (ADA) requirements. This Policy can be met at the time of development.

Buffering and screening will be provided between the single-family residential zone and the proposed commercial uses on the subject property. Landscaping will also be provided within the project site's parking lot. Policies 12, 14 and 15, Development Compatibility, Screening of Storage and Lighting, shall be met at the time of development.

Community and Neighborhood Shopping and Service Facilities offer a variety of goods and services. Community-scale facilities may include shopping goods for a market area consisting of several neighborhoods. The proposed commercial development that would result from the approval of the proposed action abuts a parkway, two collectors, and lies adjacent to an arterial street. The property, if developed with commercial uses, would serve the two abutting neighborhoods, Morningside (to the north) and South Gateway, as well as the residentially developed and developing portions of the Southeast Salem Neighborhood that lies east of the property. The approval of the proposed Comprehensive Plan Map amendment would accommodate the applicant's proposed commercial uses on the property. The resulting neighborhood and community shopping and service facility could provide the residents of the nearby neighborhoods with a "clustered" commercial development. The approval of the proposed action would provide retail development for the adjacent neighborhoods. Commercial Development Policies pertaining to shopping and service facilities are met.

If the requested Comprehensive Plan Map Change to "Commercial" is approved, then commercial development could occur on the subject property. Landscaping, buffering, and screening of land, as required by Chapter 132 of the Salem Revised Code (SRC), preserves the livability of the community, aesthetically and environmentally; and safeguards and enhances property values and protects public and private investments. The intent of Chapter 132 is provided by the use of plant materials to provide buffering and screening to mitigate harmful effects of the sun, wind, rain, noise, lack of privacy, and differing adjacent uses. The use of plant materials also defines spaces, articulates the uses of specific areas, and unifies elements of a site. Landscaped buffer strips will be provided along the boundaries of the subject property, visually separating the site from adjacent residential uses. The buffer strips policy can be met at the time of development.

Under Criterion 3, the applicant addressed Statewide Planning Goal 12, Transportation. The city's goals and policies pertaining to transportation are discussed below.

J. *Transportation Goal: To provide a balanced, multi-modal transportation system for the Salem Urban Area that supports the safe and efficient movement of goods and people.*

1. *The Salem Transportation System Plan shall contain goals, objectives, policies, plan maps, and project lists that will guide the provision of transportation facilities and services for the Salem Urban Area.*

In the Salem Transportation System Plan, there are Goals, Objectives and Policies. Policy 1.1, Multi-modal capacity, a subsection of Street System Element Objective 1, Street System Element Goal 1 states *"[t]he City shall fulfill its system wide travel capacity needs through the utilization of multiple travel modes within the public right-of-way."*

The subject property is adjacent to a parkway (Kuebler Boulevard), a minor arterial (Battle Creek Road SE), and two collector streets (27th Avenue SE and Boone Road SE). Battle Creek Road SE is served by public transit (22 Battle Creek) and bicycle lanes that extend from north of Kuebler Boulevard to south of Boone Road SE. According to the Salem TSP, extension of the bicycle lanes are planned south from Battle Creek Road SE to the terminus of Robins Lane at Commercial Street SE. There are bike lanes north of Kuebler Boulevard, along Battle Creek/Pringle Road. As part of the development review for the proposed changes to the subject property, additional right-of-way will be dedicated to accommodate future improvements to the street system in the area.

Street System Element Objective No. 2: Design City streets in a manner that maximizes the utility of public rights-of-way, is appropriate to their functional role, and provides for multiple travel modes, while minimizing their impact on the character and livability of surrounding neighborhoods and business districts.

Policy 2.1 Multi-modal Street Design. The City of Salem shall design its streets to safely accommodate pedestrian, bicycle, and motor vehicle travel.

The proposed development of the subject property will provide additional right-of-way along Battle Creek Road SE and Kuebler Boulevard. Mitigation requirements from the TIA may require additional right-of-way on 27th Avenue and Boone Road SE. Right-of-way dedication will provide improvements to accommodate pedestrians, bicycles and motor vehicles in a safe manner. This Policy can be met at the time of development.

Policy 2.2 Multimodal Intersection Design. Arterial and collector street intersections shall be designed to promote safe and accessible crossings for pedestrians and bicyclists. Intersection design should incorporate measures to make pedestrian crossings convenient and less of a barrier to pedestrian mobility. Accommodations shall be made for transit stops at or near street intersections.

The proposed development of the subject property will provide a mechanism for the provision of additional right-of-way on a parkway and a minor arterial, and will provide for the future improvements of two collector streets. Policy 2.2 can be met at the time of development.

Policy 2.3 Arterial and Collector Street Intersections: Left-turn pockets shall be incorporated into the design of all intersections of arterial streets with other arterial and collector streets, as well as collector streets with arterials and other collectors.

A left-turn pocket is provided at 27th Avenue onto Kuebler Boulevard, and at Battle Creek Road SE onto Kuebler Boulevard. Provisions for additional right-of-way along the roads that border the property will provide for an enhancement of their street intersections at a future date.

Policy 2.4 City of Salem Street Design Standards. The City of Salem Design Standards shall be the basis for all street design within the Salem Urban Area.

Policy 2.4 can be met by the provision of additional right-of-way at the time of development.

Policy 2.8 Physical Improvements to Existing City Streets: Existing streets that are to be widened or reconstructed shall be designed to the adopted street design standards for the appropriate street classification . . . Whenever possible, the design of the street shall be sensitive to the livability of the surrounding neighborhood.
The proposed development of the subject property will provide additional right-of-way on adjacent streets. The additional right-of-way will accommodate pedestrians, bicycles and motor vehicles in a safe manner and provide for landscape strips adjacent to the street. Policy 2.8 can be met at the time of development.

Street System Element Objective No. 5: A street system that is improved to accommodate travel demand created by growth and development in the community.

Policy 5.1 – Traffic Impact Analysis Requirements. The City shall require Traffic Impact Analyses as a part of land use development proposals to assess the impact that a development will have on the existing and planned transportation system. Thresholds for having to fulfill this requirement and specific analysis criteria are established in the City of Salem Street Design Standards.

Due to the large size of the subject property, and its probable impacts to the city's transportation system, city staff advised the applicant to prepare a Transportation Impact Analysis (TIA) prior to submitting an application for the Comprehensive Plan Map and Zone Change. The applicant submitted a TIA to the City Traffic Engineer prior to submitting the Comprehensive Plan Map change request, in April 2006. The applicant submitted a revised TIA subsequent to Salem Public Works' staff and ODOT's review of the April 2006 TIA. The most recent TIA includes additional analyses of the proposed project's impact on the city's transportation system.

Policy 5.2 – Exactions Required of Development. The City may require new development to make site-related, right-of-way dedication and transportation system improvements that are identified through the Traffic Impact Analysis process and other Code requirements.

Bicycle System Element Goal: To provide a comprehensive system of connecting and direct on-street bicycle facilities that will encourage increased ridership and safe bicycle travel.

Bicycle System Element Objective No. 1: The City of Salem will create a comprehensive system of bicycle facilities.

Policy 1.1 – Provide Bicycle Facilities on Arterial and Collector Streets.

When improvements are made to the intersections surrounding the subject property, Policy 1.1 of the Bicycle System Element Objective can be met.

Pedestrian System Element Goal: To provide a comprehensive system of connecting sidewalks and walkways that will encourage and increase safe pedestrian travel.

Pedestrian System Element Objective No. 1: The City of Salem shall create a comprehensive system of pedestrian facilities.

Policy 1.3 – Focus Attention on Intermodal Connections.

Policy 1.4 – Ensuring Future Sidewalk Connections.

Policy 1.5 – Complete Connections with Crosswalks.

Policy 1.6 – Compliance with ADA Standards.

Pedestrian connections will be provided from the public sidewalks through the site as part of the development of the property. Pedestrian System Element Policies can be met at the time of development. There are no sidewalks along the perimeter of the subject property. Improvements along Battle Creed Road SE, Boone Road SE and 27th Avenue SE include street lights and sidewalks on the development side of the property. ADA compliance can be met at the time of completion of all pedestrian-related improvements, which are required as part of and prior to the development of the property.

Pedestrian System Element Objective No. 2: The City of Salem shall seek to double the 1995 percentage of trips made by pedestrians by the Year 2015.

Policy 2.2 – Pedestrian Supportive Land Uses.

Policy 2.3 – Promotion of Walking for Health and Community Living.

Policy 2.2 will be implemented by the provision of additional community and neighborhood services within walking distance of the neighborhoods being served. This Policy can be met at the time of development.

Transportation – Neighborhood Livability Policy 19.

Transportation – Aesthetics and Landscaping Policy 20.

The subject property abuts the intersections of a minor arterial street with a parkway and collector street. Additional pedestrian connections to and through the site will encourage people to walk to the site and will encourage the use of public transit to the site. Salem-Keizer Transit serves the site (22 Battle Creek) and development of the site will encourage the use of the public transit system. Policy 19 can be met. The provision of additional right-of-way will provide extra areas for landscaping in addition to on-site landscaping and screening. Policy 20 can be met at the time of development.

Criterion 6: The proposed change benefits the public.

Applicant's Statement:

The proposed change will benefit the public by providing a center for goods and services at a central location within a major new residential sub-area. The location of the site is consistent with the intent to establish residential neighborhoods in proximity to such services, as expressed in Residential Development Policy 1.d. The site is located along the major access routes to the surrounding residential areas, and the availability of services at this location will decrease the travel distance from the neighborhoods to commercial services, which are currently located along Commercial Street. A commercial center at this location will also change the direction of travel that is currently required to obtain commercial services from this area, and as a result decrease the traffic impact at the Kuebler-Commercial intersection. In addition, as a result of its proximity to the surrounding neighborhoods, the site will be accessible by alternate means of transportation, and provide the opportunity to decrease usage of private motor vehicles. For these reasons, the proposed change benefits the public.

Applicant's Summary:

Because there are no appropriately designed suitable alternative sites in the vicinity and there are no designated sites of a similar size, because the proposal will not adversely affect the inventory of

land for single family housing, because the proposed change will not cause an adverse impact on the transportation system or a change in the functional classification of an existing roadway, and because the proposal conforms to the Statewide Planning Goals and the applicable Goals and Policies of the Comprehensive Plan, the criteria for Comprehensive Plan Change are satisfied.

Staff Findings:

The proposed Comprehensive Plan Map amendment will benefit the public in that the change will promote commercial development that can serve several neighborhoods, will provide for the mechanism to upgrade all adjacent transportation facilities to meet current standards, and will provide for additional right-of-way along Kuebler Boulevard and Battle Creek Road SE for bike lanes, and provide for future up-grades to all adjacent existing intersections. Staff finds that the proposed Comprehensive Plan Map amendment is a benefit to the public.

FINDINGS APPLYING TO THE APPLICABLE SALEM REVISED CODE CRITERIA FOR ZONING MAP AMENDMENT

The following analysis addresses the rezoning of the subject property from RA (Residential Agriculture) to CR (Commercial Retail). The property consists of approximately 18.4 acres.

Salem Revised Code, Chapter 114, Section 160 provides the criteria for approval for Zone Map amendments. In order to approve a quasi-judicial Zone Map amendment request, the administrative body shall make findings based on evidence provided by the applicant demonstrating that all the following criteria and factors are satisfied. The extent of the consideration given to the various factors set forth below will depend on the nature and circumstances of each individual case. Unless any of the factors are deemed irrelevant, something more than an unsupported conclusion will be required, but the degree of detail in the treatment of relevant factors will depend on the degree of proposed change or deviation, and the scale and intensity of the proposed use or development. The requisite degree of consideration is directly related to the impact of the proposal – the greater the impact of a proposal in an area, the greater is the burden on the proponent.

The applicable criteria and factors are stated below in **bold** print. Following each criterion is a response and/or finding relative to the amendment requested. The applicant provided justification for all applicable criteria (Exhibit 2).

Criterion 1: **The applicant for any quasi-judicial land use action under this zoning code shall have the burden of proving justification for the proposal. The greater the impact of the proposal in an area, the greater is the burden on the proponent.**

Criterion 2: **The proposal must be supported by proof that it conforms to all applicable criteria imposed in this zoning code; that it conforms to all standards imposed by applicable goals and policies of the comprehensive plan in light of its intent statements, including adopted neighborhood plans; and that it conforms with all applicable land use standards imposed by state law or administrative regulation. The burden rests ultimately on the proponent to bring forward testimony or other evidence sufficient to prove compliance with these standards. At a minimum, the proponent's case should identify and evaluate the proposal in the context of all applicable standards.**

Applicant's Statement:

Zone Change Considerations

The intent and purpose of zone changes is described in SRC 113.100(a). In this section , it is

recognized that due to a variety of factors including normal and anticipated growth, changing development patterns and concepts, and other factors which cannot be specifically anticipated, the zoning pattern cannot remain static. The zone change review process is established as a means of reviewing proposals and determining when they are appropriate.

This proposal is made in response to the ongoing development of the extensive areas of residential land in the southeast part of the city. The basis for the proposal is the recognition that services should be located in proximity to residential neighborhoods in order to reduce travel distances, make more efficient use of the transportation system, and afford the public transportation alternatives, among others. These factors have been recognized in various land use and transportation studies that have focused on the lands around the Kuebler interchange, and they are consistent with those that are recognized as warranting consideration in the zone change process. There are no other vacant sites in the area that are designated for commercial use, and this Zone Change is the means provided for addressing the change in the land use pattern.

The subject PacTrust property is proposed to be rezoned to CR to implement the requested *Commercial* Comprehensive Plan designation. The proposed zone change is based on the relationship of the site to the land use and transportation patterns that are present at this location. These factors are consistent with the provision for zone changes as described in SRC 113.100(a).

Staff Findings:

The relationship of the proposal to the Salem Area Comprehensive Plan (SACP) has been examined, as demonstrated in the response to the Minor Comprehensive Plan change Criteria 1-6. The proposed amendment to the Comprehensive Plan from Single Family Residential to Commercial with concurrent Zone Change from RS (Single Family Residential) to CR (Commercial Retail) can conform to the Goals and Policies of the Comprehensive Plan. Criterion 1 has been met.

Staff concurs with the facts presented by the applicant as stated above and concludes that the applicant satisfies Criterion 2 for a zone change from RS to CR. As shown above in the response to Comprehensive Plan Change Criterion 5, the proposed amendment to the Comprehensive Plan map from "Single-Family Residential" to "Commercial" and zone change from RS to CR is in conformance with the Goals and Policies of the SACP. Any proposed development would be developed to the standards of the Salem Revised Code.

The proposed amendment to the Salem Zoning Map conforms with all applicable land use standards imposed by state law or administrative regulation for the same reasons as detailed within the findings addressing Criterion 2 of the proposed SACP Map amendment (SRC Section 64.090(b)(3)).

The subject property is within the boundaries of South Gateway Neighborhood, which does not have a Neighborhood Plan adopted by the City Council. Prior to 1995, the property was located within the Morningside Neighborhood boundaries, but Morningside's neighborhood plan adopted by the Salem City Council in June 1984 (Ordinance No. 67-84) does not include land east of Battle Creek and north of Boone Road SE. The South Gateway Neighborhood is holding a meeting on November 16, 2006, at which they may poll their members for support or opposition of the proposed Comprehensive Plan/Zone Change.

Staff recommends conditions of approval for the zone change in order to mitigate the transportation impacts of the proposed development. Staff recommends the developer make the following improvements to the city's transportation system in the vicinity of the project area. These recommended conditions of approval are shown in the Salem Public Works letter to the applicant (Exhibit 3).

Condition 1: The intersection of Battle Creek and Boone Roads SE shall be improved to include a traffic signal with dedicated westbound left-turn lane, westbound right-turn lane and an eastbound left-turn lane. The southbound left-turn lane shall be lengthened to provide a minimum of 300 feet of storage.

Condition 2: The intersection of Battle Creek Road SE and Kuebler Boulevard shall be improved to provide a northbound left-turn lane with a minimum of 350 feet of storage. To provide the necessary northbound left-turn storage at this intersection with the southbound left-turn lane storage at Battle Creek and Boone Roads, side-by-side left-turn lanes shall be constructed as approved by the Public Works Director.

Condition 3: Kuebler Boulevard shall be widened to meet City of Salem Standards with curb, sidewalk and bike lanes. The widening shall extend from 1500 feet west of Battle Creek Road SE to the Interstate 5 ramps to provide two eastbound lanes.

Condition 4: Dual left turn lanes shall be constructed on eastbound and westbound Kuebler Boulevard at 27th Avenue SE. Only one eastbound left-turn lane will be striped as there is only one receiving lane. For the westbound left turn lanes, an additional receiving lane shall be constructed which will drop as a right-turn only lane at the subject property's driveway on 27th Avenue.

Condition 5: In addition to boundary street improvements required by Salem Revised Code (SRC) 77.150, the developer shall coordinate with the city and use best practices for design and location of site access and shall construct left-turn lanes and pedestrian refuge islands where appropriate.

Condition 6: The developer shall commit up to $5,000 for traffic calming devices (such as speed humps or other traffic calming measures) to be used in the residential neighborhood south of the proposed development if a need is identified. The Neighborhood Traffic Management Program is the process used to identify traffic calming needs.

Condition 7: The developer shall commit to one of the following actions, depending on whether site access is provided on Kuebler Boulevard.

(a) If no direct access to Kuebler Boulevard is provided, the developer shall construct an eastbound right-turn lane on Kuebler Boulevard at 27th Avenue.

(b) If a right-in access on Kuebler Boulevard is provided, the developer shall build a right-in access with a design that minimizes impact to through vehicles and provides a safe crossing for bicycle and pedestrian traffic. In addition, the developer shall complete the widening of the eastbound lanes of Kuebler Boulevard west to Commercial Street. This additional widening of approximately 1300 feet of Kuebler Boulevard is considered as payment for a grant of access on Kuebler Boulevard to allow a right-in driveway on the site.

Any commercial development within the CR zone requires meeting current Salem Revised Code (SRC) bufferyard, landscaping and setback requirements. Staff finds the applicant meets criterion 2 for a zone change from RS to CR.

Criterion 3: **In addition to the proof under [Criteria 1 and 2] above, the following factors should be evaluated by the proponent and shall, where relevant, be addressed by the administrative body in its final decision:**

Factor 1: The existence of a mistake in the compilation of any map, or in the application of a particular land use designation to any property in this zoning code or the comprehensive plan;

Factor 2: A change in the social, economic, or demographic patterns of the neighborhood or of the community;

Factor 3: A change of conditions in the character of the neighborhood in which the use or development is proposed;

Factor 4: The effect of the proposal on the neighborhood, the physical characteristics of the subject property, and public facilities and services:

Factor 5: All other factors relating to the public health, safety, and general welfare which the administrative body deems relevant.

Applicant's Statement for Factor 1:

The subject property has been designated *Developing Residential* and zoned RA at least since the adoption of the Comprehensive Plan in 1982. These designations were typically applied to all vacant lands in the city and outlying parts of the urban area, where public services were not available. The existing designation on the property precedes the opening of Kuebler Boulevard.

Since the site was designated it has been annexed into the city, Kuebler Boulevard has been opened, and public services have become available. Despite these changes, it remains part of an extensive area of vacant land designated for residential use, and the City has not pre-designated any land in the area for commercial services to serve the surrounding community. The lack of a site for commercial services in this area could be regarded as a mistake in the land use plan. However, as stated in the Comprehensive Plan, changes to the land use pattern are expected to occur as conditions change and as demand for various land uses change. This proposal follows the methodology set out in the Comprehensive Plan for changes to the land use pattern, and it is consistent with the factors for zone changes as described in SRC 113.100(a). A mistake in the land use designations is not claimed, and this review factor is not relevant to the proposal.

Applicant's Statement for Factor 2:

The ongoing development of the southeast part of the community has resulted in changes in its social, economic, and demographic patterns. The construction of large numbers of new homes to north and south of the site have increased the population in the area, and converted vacant land to developed neighborhoods. According to the ""SKATS Population Growth by Subarea 1993-2015" map, included in the STSP as Map 2, the population of south Salem is projected to increase by 58%. According to the "SKATS Employment Growth by Subarea 1990-2015" map, included in the STSP as Map 3, employment in south Salem is projected to increase by 91%. These are changes in the social, economic and demographic patterns of this part of the community. The increase in the population, employment, and the number of households in the area creates a local market for goods and services. This is a change in the economic pattern of the area. Despite the ongoing increase in the number of households and the population, no land has been designated for commercial uses to serve the population. The proposed zone change is requested to create a commercial center to serve the population of the southeast part of the city. For these reasons, the proposed zone change is consistent with the changes in the social, demographic, and economic patterns of the neighborhood and the community.

Applicant's Statement for Factor 3:

As discussed previously and as described in (2), there has been a change in the conditions in the character of the neighborhood as a result of the ongoing development of formerly vacant land. Housing and population density in the vicinity has increased, with resultant increases in traffic. Additional development is continuing this change. The proposed zone change to CR is requested to create a commercial center to serve the surrounding community. The proposal is consistent with the changes that have occurred. The proposal will provide a community-neighborhood center that will be appropriate for the existing and continuing changes to the conditions of the character of the neighborhood.

Applicant's Statement for Factor 4:

The effect of the proposal on the neighborhood will be to provide commercial services in proximity to residential areas, rather than additional residential development. Another effect will be for these services to be accessible by alternate, non-vehicular modes of transportation.

The effect on the property will be to develop vacant land. This is expected on serviceable land in the city. Public services can be made available to the property at adequate levels to support the type of use proposed, and there are no unusual physical obstacles or special physical features that require consideration.

There will be no significant effects on public facilities. Public facilities can be made available to the site at levels that will be adequate to serve the type of use proposed. The facility requirements of the uses will be reviewed by the City for conformance to standards prior to construction. All necessary public facilities and services will be provided at adequate levels to support the use. The actual facilities and services to be required will be specified through the building permit review process.

Applicant's Statement for Factor 5:

The proposed use will benefit the public health, safety and welfare, by providing frequently used commercial services in closer proximity to the residential population than at present. This will result in fewer vehicle miles traveled, reduced travel times, less impact on the transportation system, and the opportunity to access those services without the use of a motor vehicle. Bufferyards and landscaping will be provided as specified by the Zone Code for screening and separation from surrounding residential areas. All necessary public services and facilities are available to the property. The condition of the transportation system in the area will be enhanced by the improvements to the street system that serves the area, including the Battle Creek-Kuebler intersection, the Kuebler at 27th intersection, the widening of Kuebler to four lanes, and additional turn lanes at the southbound I-5 off ramp.

With the development standards for bufferyards and landscaping, specified street improvements, and appropriate connections to public facilities and services, the proposed development of the property will not create impacts that would be detrimental to the public health, safety or welfare.

Staff Findings:

Staff concurs with the applicant's evaluations of the five factors listed above and concludes that the application satisfies zone change criterion 3. In addition, staff provides the following additional findings for each factor as they pertain to the subject properties.

Factor 1: Staff concurs with the facts presented by the applicant as stated above and concludes that the applicant satisfies Factor (1) of Criterion 3 for a zone change

from RA to CR.

SRC 113.100(a) recognizes that due to a variety of factors including changing development patterns, concepts, and community needs, and other factors which cannot be specifically anticipated, the zoning pattern cannot remain static. This zone change is proposed in response to the lack of commercial services to serve the abutting neighborhoods. The overall project will increase the inventory of commercial land available to retail businesses. The zone change provides an opportunity to expand and diversify the range of commercial, retail and professional services available to the neighborhoods in the vicinity of the subject property. The intensification of use from residential to commercial will have a minor impact on the surrounding area in comparison with the change in look to the area with the provision of landscaped areas, buffering and screening, and a new look to the intersections of 27th Avenue and Battle Creek Road SE with Kuebler Boulevard, where the applicant proposes pedestrian-friendly gateways to the proposed commercial development. The proposed zone change corresponds to the proposed change in the Comprehensive Plan Map designation.

The change in zoning from RS (Single Family Residential) to CR (Commercial Retail) will provide for commercial, retail and business opportunities for adjacent neighborhoods. The proposed Zone Change is an appropriate means of addressing the changing demographic patterns within the adjacent neighborhoods.

Factor 2: Staff concurs with the facts presented by the applicant as stated above and concludes that the applicant satisfies Factor (2) of Criterion 3 for a zone change from RA to CR.

Factor 3: Staff concurs with the facts presented by the applicant as stated above and concludes that the applicant satisfies Factor (3) of Criterion 3 for a zone change from RA to CR. The property helps meet the needs of the neighborhood with commercial, retail and professional services and establishments. Buffering and screening will be provided between the uses. The single family homes located across Boone Road SE from the subject property face internal, local streets rather than Boone Road SE. The proposed zone change addresses the change in the conditions of the neighborhood being served by providing a location within walking distance which would provide multi-purpose neighborhood services.

Factor 4: There will be transportation impacts on the neighborhood. Salem Public Works recommends several conditions of approval be placed on the zone change request in order to mitigate the impacts to the neighborhood. See Exhibit 3. Public Works requests improvements to all adjacent roadways, commitment of $5,000 for traffic calming devices for use in the neighborhood if identified as a need, and improvements to Kuebler Boulevard that extend past the subject property. Staff recommends that if the zone change is approved, the improvements requested by Salem Public Works identified in Exhibit 3 be conditions of approval.

The proposal to change the zone as conditioned may have a significant effect on the neighborhood, the physical characteristics of the property, or public facilities and services. The form of the development, landscaped areas, buffering and screening areas, access and parking will be established utilizing the project area which includes the subject property and the land abutting it to the west. The relationship of the development to surrounding properties will not change as a result of change in zoning as long as the access driveway on Boone Road SE is offset from any of the local streets that terminate at Boone Road SE west of Battle Creek Road SE, and specific design guidelines are conditions on the zone change. Planning staff received one comment concerning offsetting the driveway access for the subject property on Boone Road SE, and that person was concerned with the driveway lying directly across from Cultus Avenue. Staff recommends as a

condition of approval that the developer offset their access driveway along Boone Road SE from Cultus Avenue at a location approved by the Salem Public Works Director.

Condition 8: The developer shall offset their access driveway along Boone Road SE from Cultus Avenue at a location approved by the Salem Public Works Director.

The subject property is underutilized, containing two single-family dwellings within an urban parcel. The proposed CR zone will provide for commercial uses. As indicated by the applicant, buffering and screening will be provided on the property that exceeds the standards set forth in the Salem Revised Codes for CR land. Staff finds that with the recommended mitigative conditions relating to the city's transportation system previously discussed and the following recommended design guidelines, the proposal will have no significant effect on the neighborhood or public facilities and services, and this criterion is satisfied. Staff recommends as conditions of approval that the applicant/Developer meet the following design guidelines.

Condition 9: The applicant shall establish a landscaped setback along the street frontages of the project area to provide buffering and screening from the street frontage. Along Kuebler Boulevard, the setback shall be a minimum of five (5) feet in depth from the property line, as required in the CR Zone, Salem Revised Code (SRC) 152.080. Along Boone Road SE and 27th Avenue SE, the setback shall be a minimum of fifteen (15) feet in depth where the project area lies opposite residential uses.

Condition 10: The applicant/developer shall provide sidewalks along all street frontages. The sidewalks may be located inside the setback area as part of a landscape plan.

Condition 11: The applicant/developer shall provide landscaping within the street frontage setbacks as required in SRC 132.

Condition 12: The applicant/developer shall provide a brick or masonry wall with a minimum height of six (6) feet along the interior line of the landscaped setback along Boone Road SE and 27th Avenue SE, opposite residential uses. The applicant/developer may provide a landscaped berm within the setback in lieu of a wall.

Condition 13: The applicant/developer shall provide pedestrian access at all driveway entrances to the development. The pedestrian access way shall be distinct from the vehicular travel lanes by means such as striping, distinctive pavement, elevation, or other method that clearly distinguishes the area for pedestrian travel from vehicle travel.

Factor 5: The proposed change will not affect the public health, safety and general welfare. The property will continue to use 27th Avenue and Boone Road SE for vehicular access. The applicant requests use of Kuebler Boulevard for right-in only purposes as well. Such use of a parkway must be approved by the Salem Public Works Director and meet the standard set forth in the Public Works "Development Bulletin" dated January 12, 2000. Staff recommends several conditions as a means to mitigate any impacts to the local transportation system. These recommended conditions are set forth at the beginning and end of this staff report. Development of the property shall maintain property line setbacks and the appropriate buffer yards.

Existing public services provide for water supply, sewage disposal and storm drainage, and all needed utilities are available or can be easily extended. No factors have been identified that would be detrimental to the public health, safety or welfare. In general, the public welfare will be improved by the type of development that is intended as a result of this proposed change in zoning. The approval of this proposal will provide for potential increased economic development, and job creation.

Criterion 4: **The extent of the consideration given to the various factors set forth in [criterion3] will depend on the nature and circumstances of each individual case. Unless any of the factors is deemed relevant, something more than an unsupported conclusion will be required, but the degree of detail in the treatment of relevant factors will depend on the degree of proposed change or deviation and scale and intensity of the proposed use or development. The requisite degree of consideration is directly related to the provision of [criterion 1] of this section that the greater impact of a proposal in an area, the greater is the burden on the proponent.**

Applicant's Statement:

The appropriate use of the subject site is influenced by its location, by the transportation system in the vicinity, and by local travel patterns. Based on these factors the CR zone is appropriate for the location, and it will be consistent with the land use and development pattern in the area. The proposed Comp Plan and zone change is consistent with the Plan methodology to consider changes to the use of land over time, in response to changes in conditions, and with the factors for considering a Zone Change. Based on the changes that have occurred to the pattern, character, and conditions of the neighborhood and the community, the proposal satisfies the relevant zone change considerations.

Staff Findings:

Staff concurs with the applicant's supportive findings and conclusion stated above and concludes that the application satisfies zone change criterion 4.

Based on the facts, evidence, and reasons presented, and the circumstances that apply, the proposal considers the relevant review factors and qualifies for the proposed zone change. The proposed zone change will be appropriate for the subject properties, and consistent with the surrounding area. No adverse impacts are identified. The future development of the site will result in efficient use of the property and the available public utilities. The proposal is consistent with the transportation and commercial land policies in the Comprehensive Plan, and it is consistent with the policies for commercial development. The proposal satisfies the criteria for a concurrent Comprehensive Plan Map amendment and Zone Change.

CONCLUSION

The subject property abuts single-family residential uses to the north, south and east, and abuts neighborhood commercial uses to the west. The residences to the south, across Boone Road SE, the single-family residences face the local streets that access Boone Road SE, rather than directly face Boone Road SE. The CR Zone is appropriate for the use of the subject property. The proposal is consistent and in compliance with the applicable goals and policies of the Comprehensive Plan and the Statewide Planning Goals, and satisfies all applicable criteria.

As demonstrated herein, the "Commercial" land use designation and corresponding CR (Commercial Retail) zoning designation are appropriate for the subject properties. Based upon the presented supportive findings of facts and conclusions, the proposed request to amend the Comprehensive Plan Map from "Developing Residential" to "Commercial" with concurrent Zone Change from RA (Residential Agriculture) to CR (Commercial Retail) on approximately 18.4 acres is consistent and in compliance with applicable goals and policies of the Salem Area Comprehensive Plan and the Statewide Planning Goals. The proposal satisfies all applicable criteria for Comprehensive Plan Map amendments and Zone Changes and the burden of proof that the proposed changes will have relatively little impact on the surrounding area has been met.

Based on the facts and findings presented by the applicant, staff concludes that the proposed amendment, CPC/ZC 06-06, meets the criteria for approval. The applicant met their burden of proof in satisfying the Statewide Planning Goals, and the evaluation of factors for zone change criteria, thereby meeting the approval criteria for zone change.

RECOMMENDATION

Staff recommends that the Planning Commission adopt the facts and findings of the staff report and APPROVE, by resolution, the following actions for the subject property located in the 2500 block of Boone Road SE (083W12C, Tax Lots 1800, 1900, 2000 and 2100), Comprehensive Plan Change/Zone Change 06-6 subject to the following "Conditions of Approval."

A. That the Salem Area Comprehensive Plan (SACP) map designation change for the subject property from "Developing Residential" to "Commercial" be GRANTED.

B. That the zone change from RA (Residential Agriculture) to CR (Retail Commercial) for the subject property be GRANTED.

CONDITIONS OF APPROVAL

1) The intersection of Battle Creek and Boone Roads SE shall be improved to include a traffic signal with dedicated westbound left-turn lane, westbound right-turn lane and an eastbound left-turn lane. The southbound left-turn lane shall be lengthened to provide a minimum of 300 feet of storage.

(2) The intersection of Battle Creek Road SE and Kuebler Boulevard shall be improved to provide a northbound left-turn lane with a minimum of 350 feet of storage. To provide the necessary northbound left-turn storage at this intersection with the southbound left-turn lane storage at Battle Creek and Boone Roads, side-by-side left-turn lanes shall be constructed as approved by the Public Works Director.

(3) Kuebler Boulevard shall be widened to meet City of Salem Standards with curb, sidewalk and bike lanes. The widening shall extend from 1500 feet west of Battle Creek Road SE to the Interstate 5 ramps to provide two eastbound lanes.

(4) Dual left turn lanes shall be constructed on eastbound and westbound Kuebler Boulevard at 27th Avenue SE. Only one eastbound left-turn lane will be striped as there is only one receiving lane. For the westbound left turn lanes, an additional receiving lane shall be constructed which will drop as a right-turn only lane at the subject property's driveway on 27th Avenue.

(5) In addition to boundary street Improvements required by Salem Revised Code (SRC) 77.150, the developer shall coordinate with the city and use best practices for design and location of site access and shall construct left-turn lanes and pedestrian refuge islands where appropriate.

(6) The developer shall commit up to $5,000 for traffic calming devices (such as speed humps or other traffic calming measures) to be used in the residential neighborhood south of the proposed development if a need is identified. The Neighborhood Traffic Management Program is the process used to identify traffic calming needs.

(7) The developer shall commit to one of the following actions, depending on whether site access is provided on Kuebler Boulevard.

(a) If no direct access to Kuebler Boulevard is provided, the developer shall construct an eastbound right-turn lane on Kuebler Boulevard at 27th Avenue.

(b) If a right-in access on Kuebler Boulevard is provided, the developer shall build a right-in access with a design that minimizes impact to through vehicles and provides a safe crossing for bicycle and pedestrian traffic. In addition, the developer shall complete the widening of the eastbound lanes of Kuebler Boulevard west to Commercial Street. This additional widening of approximately 1300 feet of Kuebler Boulevard is considered as payment for a grant of access on Kuebler Boulevard to allow a right-in driveway on the site.

(8) The developer shall offset their access driveway along Boone Road SE from Cultus Avenue at a location approved by the Salem Public Works Director.

(9) The applicant shall establish a landscaped setback along the street frontages of the project area to provide buffering and screening from the street frontage. Along Kuebler Boulevard, the setback shall be a minimum of five (5) feet in depth from the property line, as required in the CR Zone, Salem Revised Code (SRC) 152.080. Along Boone Road SE and 27th Avenue SE, the setback shall be a minimum of fifteen (15) feet in depth where the project area lies opposite residential uses.

(10) The applicant/developer shall provide sidewalks along all street frontages. The sidewalks may be located inside the setback area as part of a landscape plan.

(11) The applicant/developer shall provide landscaping within the street frontage setbacks as required in SRC 132.

(12) The applicant/developer shall provide a brick or masonry wall with a minimum height of six (6) feet along the interior line of the landscaped setback along Boone Road SE and 27th Avenue SE, opposite residential uses. The applicant/developer may provide a landscaped berm within the setback in lieu of a wall.

(13) The applicant/developer shall provide pedestrian access at all driveway entrances to the development. The pedestrian access way shall be distinct from the vehicular travel lanes by means such as striping, distinctive pavement, elevation, or other method that clearly distinguishes the area for pedestrian travel from vehicle travel.

EXHIBITS

Exhibit 1: Vicinity Map

Exhibit 2: Materials Submitted by Applicant

Exhibit 3: Salem Public Works comments concerning applicant's TIA

Exhibit 4: Comments from Oregon Department of Transportation

Exhibit 5: Page 1 of Salem Public Works Development Bulletin Dated January 12, 2000

Exhibit 6: Public Comments submitted as of the writing of the staff report

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Dick Loffelmacher

From: Dan Tapella
Sent: Monday, March 19, 2007 5:27 PM
To: 'Jeff Olson'; Andrew Jones
Cc: Dick Loffelmacher; Mark Olson
Subject: RE: Jamba Gateway- Tenant Response

Here are my comments on the Jamba Juice LOI response.

PREMISE: Ok with change in square footage to 1,800sf.

USE: Their Primary Use inclusion of "health products" violates GNC's exclusive. Would need to get GNC to waive this for Jamba Juice.

EXCLUSIVE USE: The primary use being 10% is too low. How about at least 20%?

TERM: They did not make a change here, but we did not cross out the word "three" prior to the five (5) year option. Although we did list only rents for one option. Hopefully they are agreeing to only one 5-year option.

PERCENTAGE RENT: Would like to push them to report. They have reported at our other locations in the past.

POSSESSION DATE: If we give them possession upon execution then we will need access to do Landlord's Work for the electrical and storefront doors. This should be minor and not a problem.

TAXES: 2007/2008 will be approximately $2.82/sf/yr.

TENANT IMPROVEMENT ALLOWANCE: The kept the amount the same and lowered the square footage. It appears fine with me.

CO-TENANCY REQUIREMENTS: Since Kohl's will not be open before they are, they will start out at reduced rent with the right to terminate. Would exclude any co-tenancy restrictions until after the third year and exclude temporary planned closures for remodeling and Force Majeure. Make right to terminate a one-time right and if tenant decides to reduced rent, base rent on 6% percent of sales. If after 12 months and co-tenancy still is not met, then tenant must either pay full rent or terminate lease.

SIGNAGE: Jeff you can provide sign criteria.

PARKING Jeff you can provide copy of the REA.

EARLY TERMINATION: I know we agreed to this the first time around, but this is a one-time right correct?

LEASE: AJ, I will leave this for you since you know the Orenco Station Lease well.

On the Landlord's Work Exhibit I only had a concern with what they added to the end of number 5. "door location and design to be approved by Tenant". With 24 feet of frontage there is not too many options for the front door. Instead of Tenant having to approve of the design, I would make the door to be similar to other double door entrances in Building D.

Please let know your thoughts.

Dan

-----Original Message-----
From: Jeff Olson [mailto:Jeff@cra-nw.com]

Sent: Monday, March 19, 2007 3:09 PM
To: Andrew Jones; Dan Tapella
Cc: Dick Loffelmacher; Mark Olson
Subject: FW: Jamba Gateway- Tenant Response

Attached please find Jamba Juice's response to our Gateway LOI comments.
JO

Jeff Olson
COMMERCIAL REALTY ADVISORS NW
733 SW 2nd Ave., Suite 200, Portland, OR 97204
Office: (503) 274-0211 ext. 160
Fax: (503) 274-0985
Direct: (503) 595-7567
Cell: (503) 957-1452
Email: jeff@cra-nw.com
Web: www.cra-nw.com

-----Original Message-----
From: Ashley Heichelbech [mailto:ashley@urbanworksrealestate.com]
Sent: Monday, March 19, 2007 3:03 PM
To: Jeff Olson
Subject: Jamba Gateway- Tenant Response

Please see attached Jamba response for Gateway. They have requested the REA
for the parking and wanted the use/exclusive language to mirror the Orenco
LOI language.

Please call with questions. Thanks,
Ashley

Ashley K. Heichelbech
Associate Broker
Urban Works Real Estate
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KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

Traffic Impact Analysis

PacTrust Kuebler Project

Salem, Oregon

September 2006

Traffic Impact Analysis

PacTrust Kuebler Project

Salem, Oregon

Prepared For:
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Prepared By:
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Project Principal: Mark Vandehey, P.E.

Project No. 7460.02

September 2006

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Section 1

Executive Summary

Executive Summary

PacTrust is proposing a multi-purpose commercial development on approximately 28.4 acres of vacant land located on the south side of Kuebler Boulevard between Battle Creek Road and 27th Avenue in Salem, Oregon. The land is currently zoned a combination of Commercial Office (CO) and Residential Agriculture (RA). PacTrust is proposing to rezone 18.4 acres of RA land to Commercial Retail (CR) to accommodate a commercial development. For the purposes of this analysis, Kittelson & Associates has identified a reasonable "worst-case" development scenario for estimating the potential traffic impact of the development on the surrounding transportation system. This "worst-case" estimate consists of 290,000 square feet of shopping center space and 24,000 square feet of medical office space. A map of the site vicinity is located in Figure 1. A map of the proposed site boundary and adjacent roadways is illustrated in Figure 2.

This Transportation Impact Analysis was prepared in accordance with the standards set forth by the City of Salem and the Oregon Department of Transportation (ODOT). The proposed PacTrust Kuebler Project can be developed while maintaining acceptable operations on the adjacent transportation network pending the inclusion of recommendations identified in this study. The findings and recommendations of this study are summarized below.

FINDINGS

Existing Conditions

- Operational analyses were performed at the intersections along Kuebler Boulevard at Commercial Street, Battle Creek Road, 27th Avenue, I-5 Southbound Ramp, I-5 Northbound Ramp, 36th Avenue, and along Boone Road at Battle Creek Road and Cultus Avenue.
- During the weekday p.m. and Saturday midday peak hours, all of the study area intersections currently operate acceptably with the exception of the Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections. The City of Salem has identified widening of Kuebler Boulevard and signalization of the Kuebler Boulevard/27th Avenue intersection as an existing needed improvement.

Year 2007 Background Traffic Conditions

- Under forecast year 2007 background traffic conditions (without site development) all study intersections are expected to operate acceptably except the previously identified Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections.
- Roadway improvements would be required to return these intersections to acceptable levels of service under the year 2007 background traffic conditions (without site development). To alleviate congestion along Kuebler Boulevard between I-5 and Battle Creek Road, Kuebler Boulevard requires widening and signalization of the Kuebler Boulevard/27th Avenue intersection, as identified under existing conditions. These improvements are identified as needed improvements in the City of Salem Transportation System Plan (TSP) and by other transportation studies.

City of Salem Improvements – Kuebler Boulevard Improvement Project

- Based on conversations with City staff, the City of Salem has received authorization for federal funds towards improving Kuebler Boulevard from I-5 through Battle Creek Road. These are funded improvements on the City's Capital Improvement Program (CIP). The design phase for the *Kuebler Boulevard Improvement Project* is currently underway and project completion is expected in 2008 according to City staff. This improvement project includes the following:
    - A second westbound travel lane, curb, and sidewalk from the I-5 southbound ramp terminal to approximately 1,600 feet west of Battle Creek Road.
    - Intersection improvements at Kuebler Boulevard/Battle Creek Road to add exclusive right-turn lanes along the northbound, southbound and westbound approaches.
    - A new traffic signal at the Kuebler Boulevard/27th Avenue intersection.
    - Traffic signal interconnect along Kuebler Boulevard from the I-5 northbound ramp terminal to Commercial Street.

Zone Change Scenarios and Trip Generation Estimates

- Under the existing CO/RA zoning, the site could generate up to 4,575 net new daily weekday trips on the adjacent street system. Of these trips, approximately 515 net new trips would occur during the weekday p.m. peak hour and 450 net new trips would occur during the Saturday midday peak hour.
- The proposed new CR zoning on the site could add up to 5,085 net new daily trips beyond that which would be predicted for the RA zoning, for a total of 9,660 net new daily weekday trips on the adjacent street system. Of these trips, approximately 900 net new trips would occur during the weekday p.m. peak hour and 1,350 net new trips would occur during the Saturday midday peak hour.

Property Access

- Access to the subject property was assumed via two full site driveways, one onto 27th Avenue and the other onto Boone Road, opposite of Cultus Avenue. This access scenario was evaluated under both existing and the proposed zoning conditions. However, to better service the site and reduce traffic on Boone Road, PacTrust is proposing a third access driveway (right-in only) along Kuebler Boulevard. Both access scenarios were evaluated under year 2007 total traffic conditions.

Existing Zoning 2007 Total Traffic Conditions

- Under forecast year 2007 total traffic conditions (assuming a reasonable worst-case buildout under the existing zoning), the Boone Road/Battle Creek Road and Kuebler Boulevard/I-5 Southbound Ramp intersections are forecast to operate over City and ODOT standards. In addition, the Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections are forecast to continue to operate unacceptably from 2005 existing traffic conditions.
- In addition to the funded City of Salem improvements to Kuebler Boulevard explained above, additional improvements are needed along Kuebler Boulevard and at the Boone Road/Battle

Creek Road and Kuebler Boulevard/I-5 southbound ramp intersections to return these intersections to acceptable operations under existing zoning 2007 total traffic conditions.

- **Kuebler Boulevard** - An additional eastbound through lane is needed along Kuebler Boulevard from west of Battle Creek Road to the I-5 southbound ramp to accommodate forecast traffic volumes.
- **Boone Road / Battle Creek Road –** A traffic signal is needed at this location to accommodate forecast traffic demands. The critical eastbound minor street movement is forecast to operate at LOS "F" and over capacity during the p.m. peak hour. A signal warrant analysis was conducted to identify the need for a traffic signal under existing zoning build-out conditions. The intersection meets Warrant 2 (four-hour vehicular volume) and Warrant 3 (peak hour volume), however, does not meet Warrant 1 (eight-hour vehicular volume).
- **Kuebler Boulevard / I-5 Southbound Ramp** - This intersection is forecast to operate at a v/c ratio of 0.93 during the weekday p.m. peak hour, exceeding ODOT's minimum v/c ratio of 0.85. The heavy southbound right turn movement from the off-ramp to westbound Kuebler Boulevard requires mitigation in the near-term. Reasonable mitigation that would return the I-5 southbound off-ramp to the minimum 0.85 v/c ratio would be to re-stripe the I-5 southbound off-ramp approach to Kuebler Boulevard from a shared left/through lane to a shared left/through/right lane. ODOT has identified the need for interchange improvements and is currently in the process of securing funding for improvement projects. Although specific improvements have not been finalized, the need for duel southbound right-turn lanes is recommended to accommodate the heavy movement. Assuming the widening of Kuebler Boulevard to two westbound through lanes from the I-5 Southbound Ramp to Battle Creek Road, the addition of a second southbound right-turn lane can be accommodated in by re-striping the southbound shared left/through lane to a shared left/through/right lane.

Proposed Zoning 2007 Total Traffic Conditions

- Under forecast year 2007 total traffic conditions (assuming a reasonable worst-case buildout under the proposed zoning), the Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections are forecast to continue to operate unacceptably from 2005 existing traffic conditions.
- Similar to the existing zoning scenario, the Boone Road/Battle Creek Road and Kuebler Boulevard/I-5 Southbound Ramp intersections are forecast to operate unacceptably.
- The minor street northbound movement at the Boone Road/Cultus Avenue-Site-Driveway intersection is forecast to operate at LOS "F" during the Saturday midday peak hour. Northbound motorists wanting to turn left or go straight will likely experience long delays during peak conditions due to the heavy eastbound movement into the proposed site. However, adequate capacity will be available for both northbound and southbound movements.
- The same roadway improvements identified under *existing zoning 2007 total traffic conditions* would be needed to meet City of Salem and ODOT operating standards under proposed zoning 2007 total traffic conditions.

- A queuing analysis determined that with the same roadway improvements identified under *existing zoning 2007 total traffic conditions* explained above in place, sufficient lane storage will exist at the study intersections in the immediate site vicinity.

Proposed Kuebler Access Driveway

- Pactrust is proposing a right-in only driveway along Kuebler Boulevard to improve vehicular access into the site. Providing limited access off Kuebler Boulevard would provide for a more convenient entrance into the site and would also reduce traffic along Battle Creek Road (south of Kuebler Boulevard) and Boone Road (east of Battle Creek Road).
- All of the study intersections were found to operate acceptably under proposed zoning 2007 mitigated traffic conditions with the proposed right-in access on Kuebler Boulevard during the weekday p.m. and Saturday midday peak hours.
- A comparison of intersection operations at the Boone Road/Cultus Avenue-Site Driveway intersection with and without the proposed right-in only access reveals an improvement to that intersection. Both level of service and volume-to-capacity ratios for the minor street critical movements are forecast to improve to acceptable levels with the proposed right-in access on Kuebler Boulevard.

Year 2025 Total Traffic Conditions

- Under forecast year 2025 total traffic conditions (with the existing CO/RA zoning scenario), all of the study intersections along Kuebler Boulevard and Battle Creek Road are projected to operate unacceptably under both zoning scenarios during the weekday p.m. peak hour.
- The proposed zone change meets the requirements of the Goal 12 – Transportation Planning Rule and the 1999 Oregon Highway Plan with the mitigation treatments in place along Kuebler Boulevard, Battle Creek Road, Boone Road, and 27th Avenue. These roadway improvements are provided under the *Planning Horizon Year Traffic Conditions* section (see Section 4, Table 10, page 42).

RECOMMENDATIONS

To ensure adequate safety and operation of the surrounding transportation system, the following improvements are recommended under the proposed zone change to meet or exceed the performance standard under build-out conditions and to avoid further degradation of intersection operations and to maintain the levels of service and v/c ratio under the current zoning for city facilities and v/c ratio for ODOT facilities under the planning horizon year conditions.

- Kuebler Boulevard Improvement Project – City of Salem (Funded in the City CIP)
    - A second westbound travel lane, curb, and sidewalk from the I-5 southbound ramp terminal to approximately 1,600 feet west of Battle Creek Road.
    - Intersection improvements at Kuebler Boulevard/Battle Creek Road to add exclusive right-turn lanes along the northbound, southbound and westbound approaches.
    - A new traffic signal at the Kuebler Boulevard/27th Avenue intersection.
    - Traffic signal interconnect along Kuebler Boulevard from the I-5 northbound ramp terminal to Commercial Street.

- Provide an additional travel lane in the eastbound direction along Kuebler Boulevard from west of Battle Creek Road to the I-5 southbound ramp.
- Install a traffic signal at the Battle Creek Road/Boone Road intersections.
- Construct an exclusive northbound right-turn lane and provide overlap phasing for this movement at the Kuebler Boulevard/27th Avenue intersection.
- Re-stripe the I-5 southbound off-ramp approach to Kuebler Boulevard from a shared left/through lane to a shared left/through/right lane.
- Provide a right-in access driveway along Kuebler Boulevard, located approximately near the midpoint of Battle Creek Road and 27th Avenue. The eastbound right-turn lane should be an exclusive lane and designed to City of Salem standards.
- Provide two egress lanes and one ingress lane at the access driveway along Boone Road, located opposite of Cultus Avenue.
- Provide two egress lanes and one ingress lane at the access driveway along 27th Avenue, located approximately 400 feet to the south of Kuebler Boulevard.
- Landscaping along the frontage of the property should be maintained to ensure adequate sight distance at the access driveways.

CONCLUSION

With the mitigation measures proposed in this report, the proposal satisfies the State and local transportation rule requirements for Plan Amendments. Additional details of the study methodology, findings, and recommendations are provided within this report.

Section 2

Introduction

Introduction

PROJECT DESCRIPTION

PacTrust is proposing a multi-purpose commercial development on approximately 28.4 acres of vacant land in Salem, Oregon. The proposed site is located along the south side of Kuebler Boulevard between Battle Creek Road and 27th Avenue. The current zoning of the site is a combination of Commercial Office "CO" (5 acres) and Residential Agricultural "RA" (23.4 acres). PacTrust is proposing to change the RA zoning to Commercial Retail "CR". In addition to the Zone Change, 18.4 acres will require a Comprehensive Plan Amendment from "Developing Residential" to "Commercial". Figure 1 shows a site vicinity map and Figure 2 illustrates the proposed site boundary.

SCOPE OF THE REPORT

This analysis identifies the transportation-related impacts associated with the proposed rezone and was prepared in accordance with the traffic impact analysis requirements of the City of Salem. The overall study area and study intersections for this project were selected based on a review of the local transportation system and direction provided by City staff. These assumptions were summarized in the October 17, 2005 scoping letter, which is included in Appendix "A". Operational analyses were performed at the following intersections:

- Kuebler Boulevard/Commercial Street
- Kuebler Boulevard/Battle Creek Road
- Kuebler Boulevard/27th Avenue
- Kuebler Boulevard/I-5 Southbound Ramp
- Kuebler Boulevard/I-5 Northbound Ramp
- Kuebler Boulevard/36th Avenue
- Boone Road/Battle Creek Road
- Boone Road/Cultus Avenue

This report addresses the following transportation issues:

- Existing land use and transportation system conditions within the site vicinity;
- Planned developments and transportation improvements in the study area;
- Forecast year 2007 background traffic conditions during the weekday p.m. and Saturday midday peak periods;
- Trip generation and distribution estimates for the development area under the existing and proposed zoning;
- Forecast year 2007 total traffic conditions under the existing and proposed zoning during the weekday p.m. and Saturday midday peak periods;
- Forecast year 2025 total traffic conditions under the existing and proposed zoning during the weekday p.m. peak period; and
- Conclusions and recommendations.

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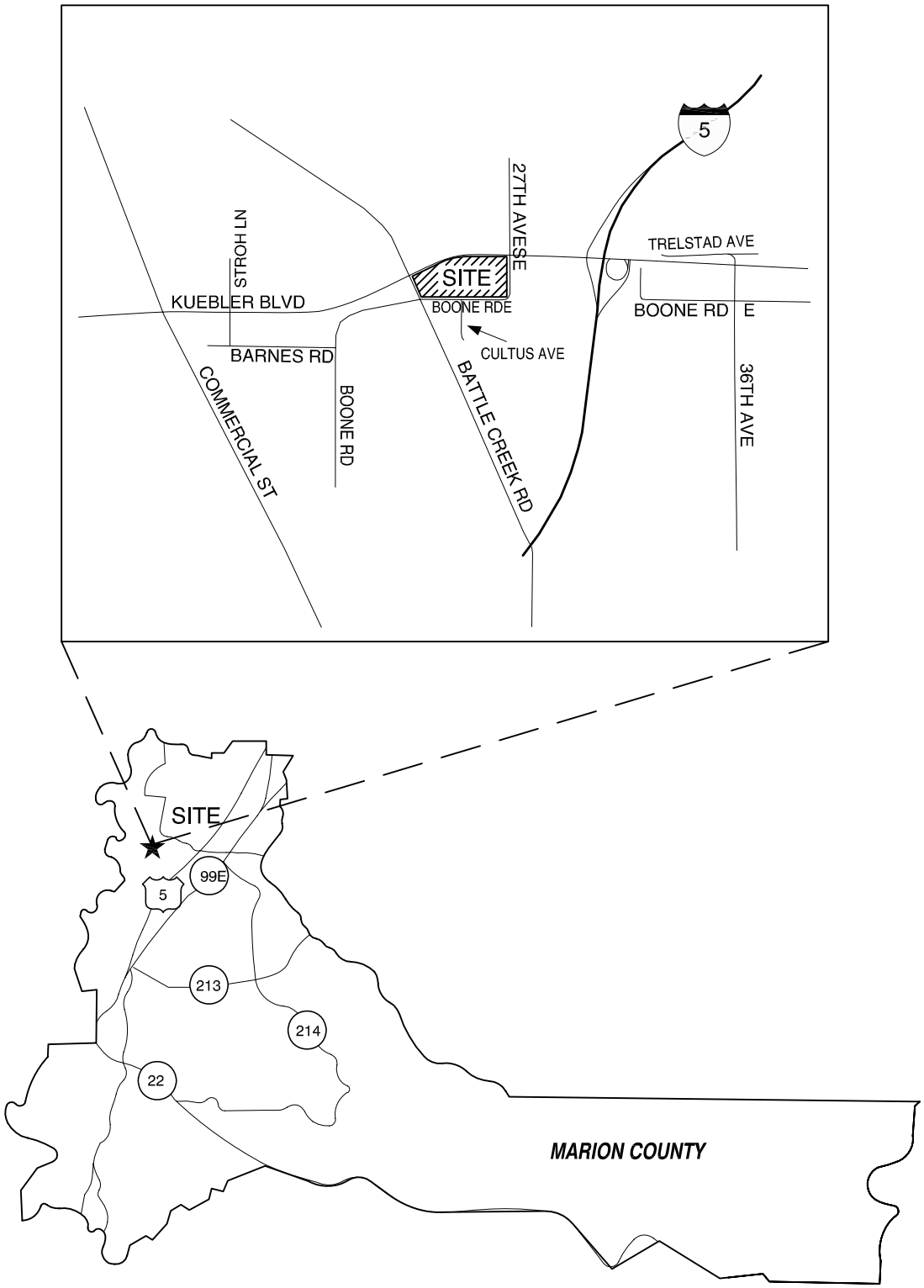
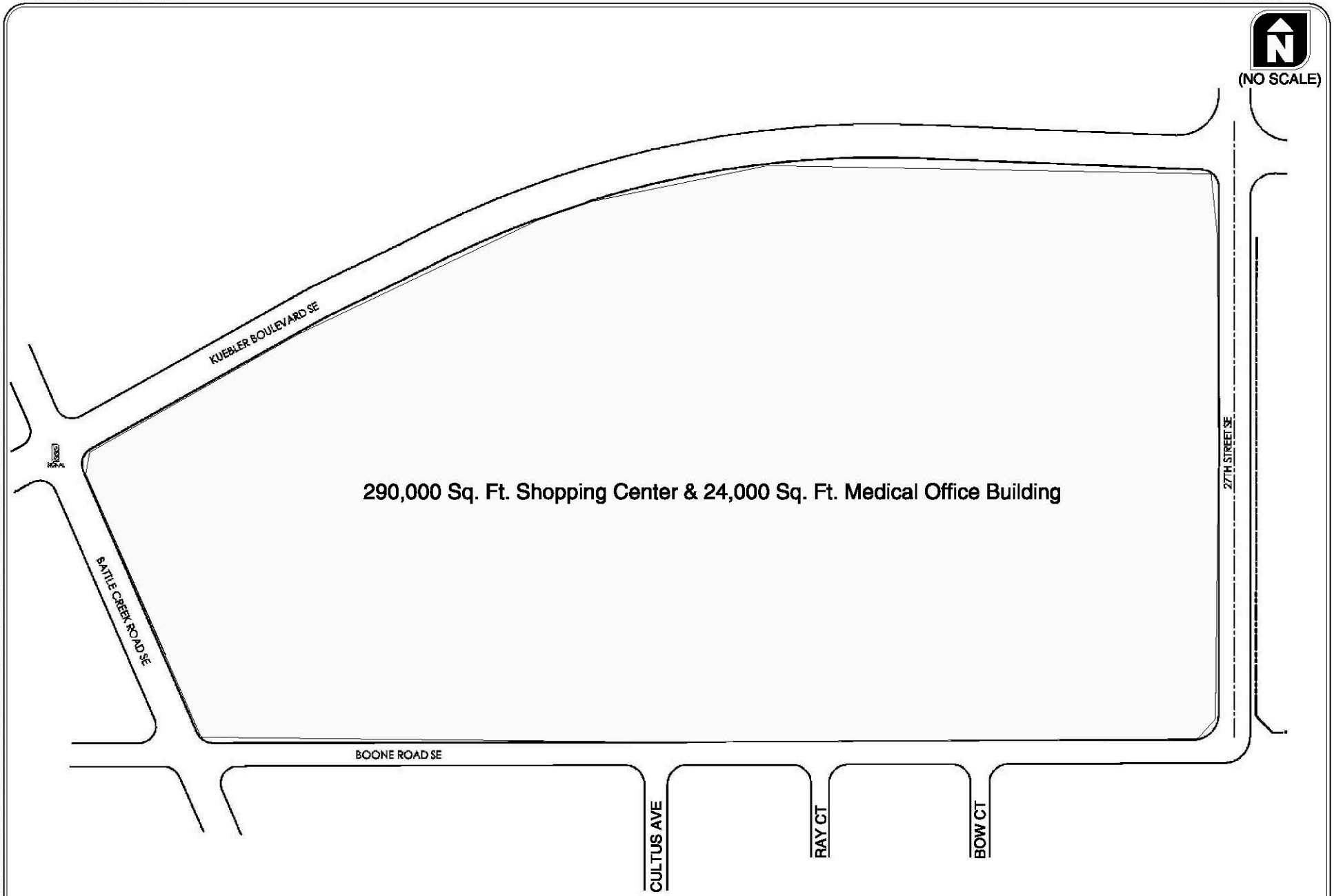


SITE VICINITY MAP
SALEM, OREGON

FIGURE
1



PROPOSED SITE BOUNDARY
SALEM, OREGON

FIGURE **2**

Section 3

Existing Conditions

Existing Conditions

The existing conditions analysis identifies site conditions and the current operational and geometric characteristics of roadways within the study area. The purpose of this section is to set the stage for a basis of comparison to future conditions.

The site of the proposed development was visited and inventoried in July 2005. At that time, information was collected regarding site conditions, adjacent land uses, existing traffic operations, and transportation facilities in the study area.

SITE CONDITIONS AND ADJACENT LAND USES

The vacant site is bordered by Kuebler Boulevard to the north, Battle Creek Road to the west, 27th Avenue to the east, and Boone Road to the south. The Abiqua School building, which currently houses a private school and offices, is located west of the site. Residential land uses are also west of the site. To the north across Kuebler Boulevard is a church, and vacant land that is designated for residential development.

From a land use perspective according to the City of Salem Comprehensive Plan, the current site is composed of 10 acres designated for commercial use and 18.4 acres designated for residential use.

TRANSPORTATION FACILITIES

Roadway Facilities

An examination of the site vicinity revealed that four primary roadway facilities would accommodate the majority of site-generated traffic. As illustrated in Figure 1, these roadways include Kuebler Boulevard, Battle Creek Road, 27th Avenue, and Boone Road. These roadway facilities and other supporting roadways that are pertinent to this traffic study are summarized in Table 1. Figure 3 illustrates the location of the study intersections formed by these roadways as well as the respective lane configuration and traffic control devices.

Table 1
Existing Transportation Facilities and Roadway Designations

Roadway	Classification	Cross Section	Speed Limit	Sidewalks?	Bicycle Lanes?	On-Street Parking?
Kuebler Boulevard	Parkway	2 lanes	45	No	Yes	No
Battle Creek Road	Minor Arterial	2 lanes	35	Partial (west side)	Yes	No
27th Avenue	Collector	2 lanes	30	No	Yes	No
Boone Road	Collector	2 lanes	30	Partial (south side)	Yes	No
Commercial Street	Major Arterial	5 lanes	45	Yes	Yes	No
Cultus Avenue	Local Street	2 lanes	NP	Yes	No	Yes

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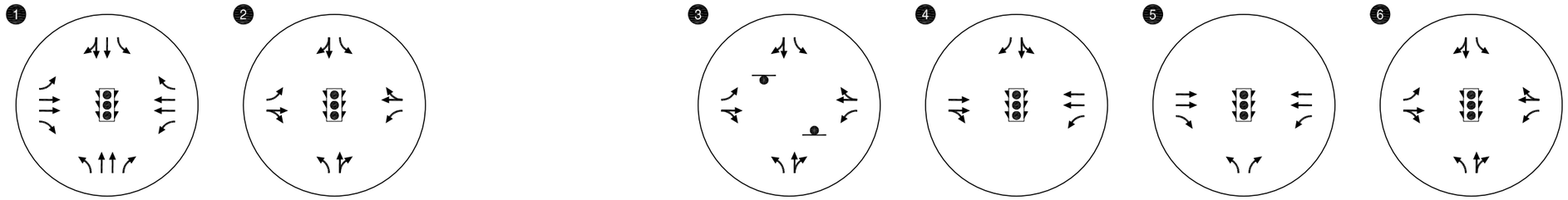
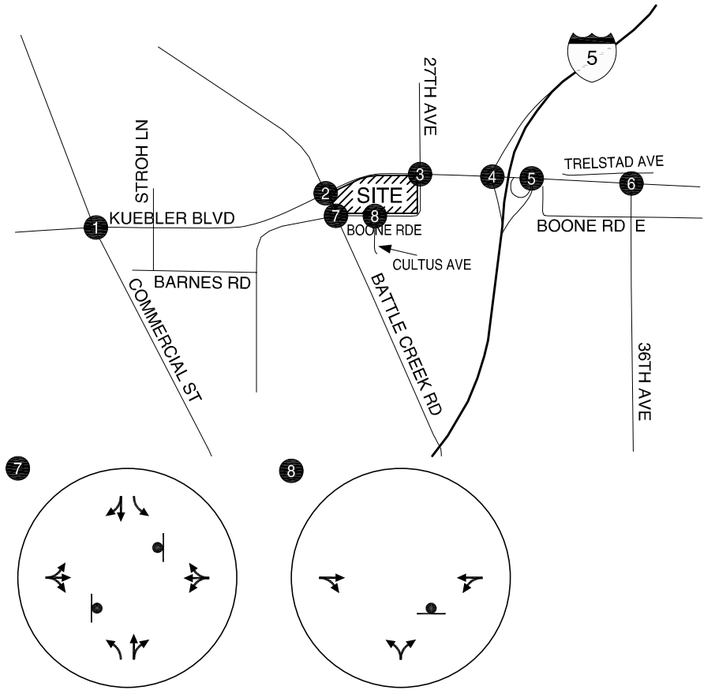




LEGEND

- STOP SIGN
- TRAFFIC SIGNAL

2005 EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES SALEM, OREGON

FIGURE 3

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Transit Facilities

Cherriots is the bus transit system serving the Salem-Keizer metropolitan area and currently offers service to the site by the 22-Battle Creek bus route, a loop route serving south Salem and the downtown. Within the site vicinity, service is provided along Battle Creek Road during weekdays and Saturdays from approximately 6:00 a.m. to 10:15 p.m., with one hour headways. No service is provided on Sundays.

TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Manual turning movement counts were obtained for the study intersections on a mid-week day and a Saturday in July 2005. These counts were conducted during the weekday evening (4:00 p.m. - 6:00 p.m.) and Saturday midday (12:00 p.m. – 2:00 p.m.) hours. The turning movement counts from the weekday p.m. and Saturday midday peak hours were summarized and rounded to the nearest five vehicles per hour as shown in Figure 4. The weekday evening peak hour was found to occur between 4:30 and 5:30 p.m. while the Saturday midday peak hour was found to occur between 12:00 and 1:00 p.m. *Appendix "B" contains the traffic count sheets used in this study.*

Current Intersection Operations

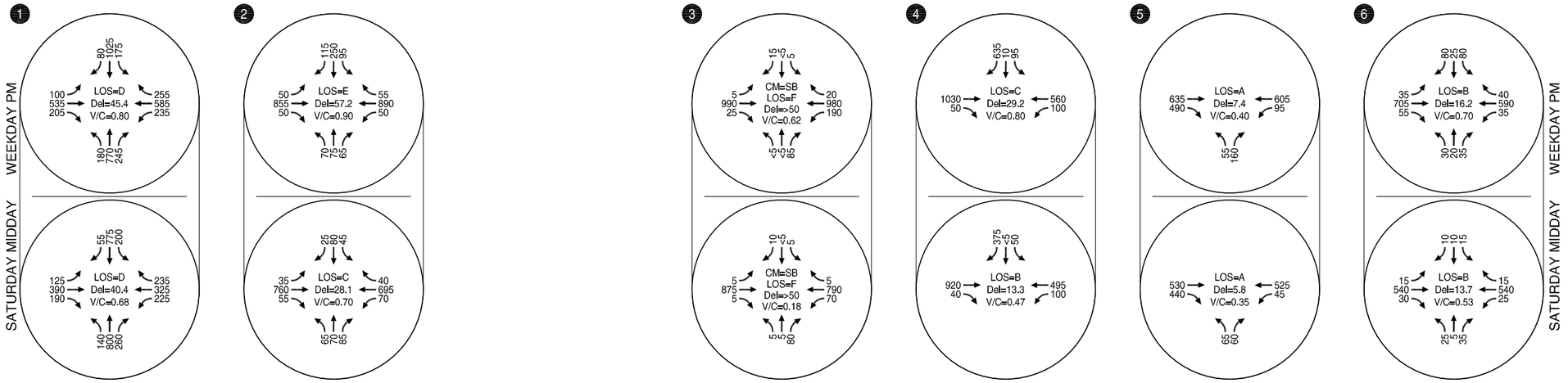
All level-of-service analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (1). A description of level-of-service and the criteria by which they are determined is presented in *Appendix "C."* Appendix "C" also indicates how level-of-service is measured and what is generally considered the acceptable range of level-of-service.

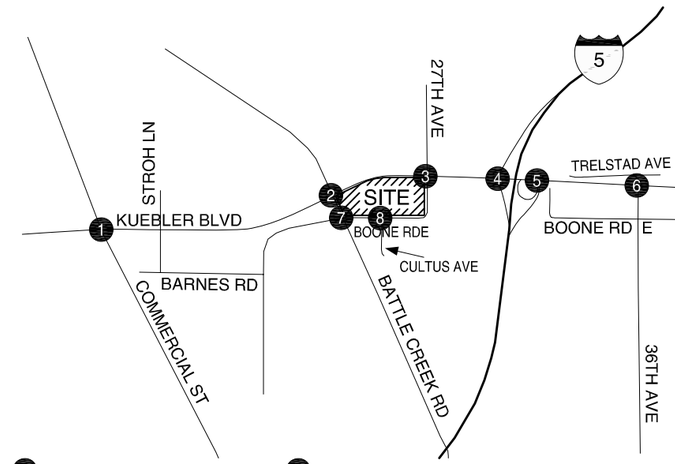
To ensure that this analysis was based on a reasonable worst-case scenario, the peak 15-minute flow rate during the weekday p.m. and Saturday midday peak hours was used in the evaluation of all intersection levels of service. For this reason, the analyses reflect conditions that are only likely to occur for 15 minutes out of each average peak hour. Traffic conditions during all other weekday hours will likely operate under better conditions than those described in this report.

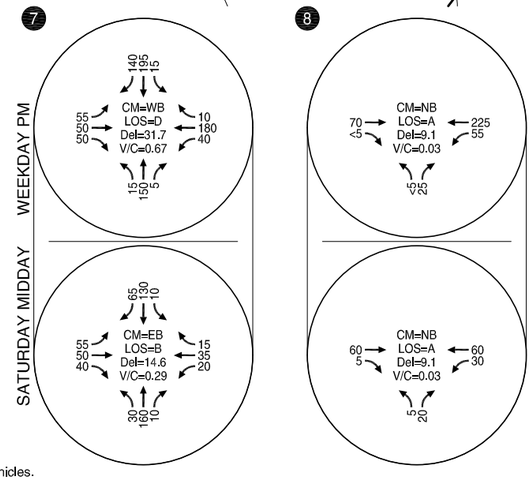
For unsignalized intersections, level-of-service is based on the intersection's capacity to accommodate the worst or critical movement. The City of Salem considers level-of-service "E" to be the minimum acceptable operations standard for unsignalized intersections. For signalized intersections, the City of Salem considers level-of-service "D" and a maximum volume-to-capacity ratio of 0.90 to be the minimum acceptable operations standard.

The I-5/SE Kuebler Boulevard ramp terminal intersections are ODOT owned facilities, subject to the operations standards defined in the *1999 Oregon Highway Plan* (2). According to the *1999 Oregon Highway Plan*, both signalized ramp terminal intersections are required to operate at or below a volume-to-capacity ratio of 0.85 during the peak hours.

Figures 4 shows the level-of-service and volume-to-capacity results for each of the study intersections under weekday p.m. and Saturday midday peak hours. The results presented in the figures indicate that all of the study intersections are currently operating acceptably during the weekday p.m. and Saturday midday peak hours with the exception of the Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections. *Appendix "D" includes the 2005 existing conditions operations worksheets.*







LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Note: Volumes shown have been rounded to the nearest five vehicles.

2005 EXISTING TRAFFIC CONDITIONS
WEEKDAY PM & SATURDAY MIDDAY PEAK HOURS
SALEM, OREGON

FIGURE 4

Kuebler Boulevard / Battle Creek Road

This intersection experiences a volume-to-capacity ratio of 0.90 with average delays over 50 seconds. Field observations reveal heavy congestion along Kuebler Boulevard, particularly in the westbound direction during the weekday p.m. peak hour. Frequent cycle failures and buildup of long vehicle queues were observed along Kuebler Boulevard.

Kuebler Boulevard / 27th Avenue

The minor street southbound movement currently operates at LOS "F" during both the weekday p.m. and Saturday midday peak hours. Field observations reveal that the mainline congestion makes it difficult for motorists to turn onto Kuebler Boulevard from 27th Avenue, and as such causes heavy delays for drivers on the minor approaches.

A signal warrant analysis was conducted to determine whether a traffic signal should be installed at this location. *The Manual on Uniform Traffic Control Devices (MUTCD) – Millennium Edition* (3) provides guidelines and factors for justifying the installation of traffic signals. The need for a traffic signal is determined through analysis of the following traffic applicable signal warrants:

- Warrant 1: Eight-Hour Volume
- Warrant 2: Four-Hour Volume
- Warrant 3: Peak Hour

Based on the results of the warrant analysis, a traffic signal is warranted at this intersection under 2005 existing traffic conditions. *Appendix "E" includes the 2005 existing conditions signal warrant analysis worksheet.*

Traffic Safety

The crash histories of the respective study intersections were reviewed in an effort to identify potential intersection safety issues. Crash records from the five most recent years of data were obtained from ODOT. A summary of the crash data is provided in the following paragraphs.

Crash rates of intersections are often expressed in crashes per million entering vehicles (MEV) for evaluation purposes. These calculations are presented in Table 2 and show that the Kuebler Boulevard/I-5 Southbound Ramp intersection has a high crash rate in comparison to the other study intersections.

Table 2
Study Intersection Crash Rates (2000-2004)

Intersection	Number of Crashes	Crashes Per Year	Peak Hour TEV	MEV/ Year	Crashes/ MEV
Kuebler Blvd / Commercial St	46	9.2	4,404	16.07	0.57
Kuebler Blvd / Battle Creek Rd	24	4.8	2,617	9.55	0.50
Kuebler Blvd / 27th Ave	6	1.2	2,223	8.11	0.15
Kuebler Blvd / I-5 SB Ramp	53	10.6	2,415	8.14	1.20
Kuebler Blvd / I-5 NB Ramp	19	3.8	2,044	7.46	0.51
Kuebler Blvd / 36th Ave	10	2.0	1,766	6.45	0.31
Boone Rd / Battle Creek Rd	14	2.8	964	3.52	0.80

Based on this crash rate, the patterns amongst the crashes were evaluated to determine if there are any operational or geometric deficiencies that are potentially contributing to the crash patterns. The results of this analysis are summarized in Table 3.

Table 3
Study Intersection Crash Type Summary (2000-2004)

Intersection	Number of Crashes	Collision Type				Severity	
		Rear End	Turning/ Side Swipe	Angle	Other	Property Damage	Personal Injury
Kuebler Blvd / Commercial St	46	33	8	4	1	4	42
Kuebler Blvd / Battle Creek Rd	24	17	4	3	0	3	21
Kuebler Blvd / 27th Ave	6	4	2	0	0	3	3
Kuebler Blvd / I-5 SB Ramp	53	42	8	2	1	15	38
Kuebler Blvd / I-5 NB Ramp	19	15	3	0	1	0	19
Kuebler Blvd / 36th Ave	10	1	4	4	1	3	7
Boone Rd / Battle Creek Rd	14	0	3	11	0	2	12

As illustrated in Table 3, the patterns amongst the crashes were evaluated to determine if there are any operational or geometric deficiencies that are potentially contributing to the crash patterns. Looking at the Kuebler Boulevard/I-5 Southbound Ramp intersection, it is revealed that the majority of crashes involved rear-end collisions. This crash type is consistent with high volume signalized intersections. A close inspection of the rear-end collisions revealed the southbound right turns to have the majority of rear-end collisions. It is recommended that the City of Salem and ODOT continue to monitor all of the study intersections for the development of more defined intersection collision patterns. *Appendix "F" includes the crash data.*

Section 4

Traffic Impact Analysis

Traffic Impact Analysis

Kittelson & Associates, Inc., on behalf of the applicant, PacTrust, has prepared this report to provide the City of Salem and the Oregon Department of Transportation with a detailed assessment of the short- and long-range traffic impacts associated with a comprehensive plan amendment and zone change of 23.4 acres of property located on the southeast corner of the intersection of Kuebler Boulevard and Battle Creek Road. This work effort is mandated by the Transportation Planning Rule (OAR 660-012-0060), as the proposed zone change will involve the redefinition of a portion of the property from *Residential Agricultural "RA"* to *Retail Commercial "CR"*. For purposes of this TIA, the zoning designation for the 28.4-acre subject property is proposed to be changed from CO/RA to CO/CR, however, the current plan and zone change application applies to 18.4 acres. The TIA assumes a zone change of 23.4 acres of RA to be changed to CR.

Approval of PacTrust's proposal for a plan and zone amendment will change the City's comprehensive plan and zoning maps, which are acknowledged land use regulations. In order to be approved, the proposed plan and zone amendments must comply with the Transportation Planning Rule (TPR). The policies of the Oregon Highway Plan (OHP) are relevant where ODOT facilities are affected.

The transportation impact analysis identifies how the study area's transportation system will operate if the 23.4 acre subject property is rezoned from CO/RA to CO/CR, as well as the development of the 5 acre property under its existing plan designation, in the year that the proposed development will experience full build as well as under year 2025 traffic conditions. The impact of traffic generated by the proposed rezone during typical weekday p.m. and Saturday midday peak hours was examined as summarized below:

- Planned developments and transportation improvements in the site vicinity were identified and reviewed.
- Background weekday p.m. and Saturday midday peak hour traffic conditions for the year 2007 were analyzed. To account for regional growth in the site vicinity an annual growth rate of two-percent was applied to existing traffic volumes at the study area intersections.
- The potential land uses within each zone designation were reviewed, and a reasonable worst case development scenario for the site was estimated under the proposed zoning designation.
- Based on the reasonable worse-case development scenario under the proposed zoning, the future daily, p.m. peak hour and Saturday midday peak hour trips were estimated and compared against the existing zoning scenario.
- A trip distribution pattern was derived through a review of existing traffic volumes, local transportation facilities, planned developments in the site vicinity, and conversations with City of Salem staff.
- Predicted site-generated traffic from site build-out under existing and proposed zoning was added to the background traffic volumes to evaluate total traffic operations at the study area intersections during the weekday p.m. and Saturday midday peak hours.

- Forecast year 2025 total traffic conditions were analyzed during the weekday p.m. and Saturday midday peak hour for both the existing and proposed zoning build out scenarios.
- The proposed zone change was reviewed for compliance with Section 660-12-060 of the Transportation Planning Rule (TPR) and for consistency with the 1999 *Oregon Highway Plan*.

2007 BACKGROUND TRAFFIC CONDITIONS

The background traffic analysis examines how the study area's transportation system will operate in the year the proposed development is expected to open. This analysis includes traffic growth due to specific development within the study area and from general growth in the region, but does not include traffic from the proposed site.

Planned Developments and Transportation Improvements

As part of this analysis, planned developments within the study vicinity that could affect background traffic at the study intersections were identified and reviewed. The traffic associated with these developments is classified as in-process traffic, or traffic that will be generated by other approved projects that have not yet been constructed or are not fully occupied at the time of the analysis. Based on conversations with City staff, although several planned developments were identified within the 20 year planning horizon, none are expected prior to 2008.

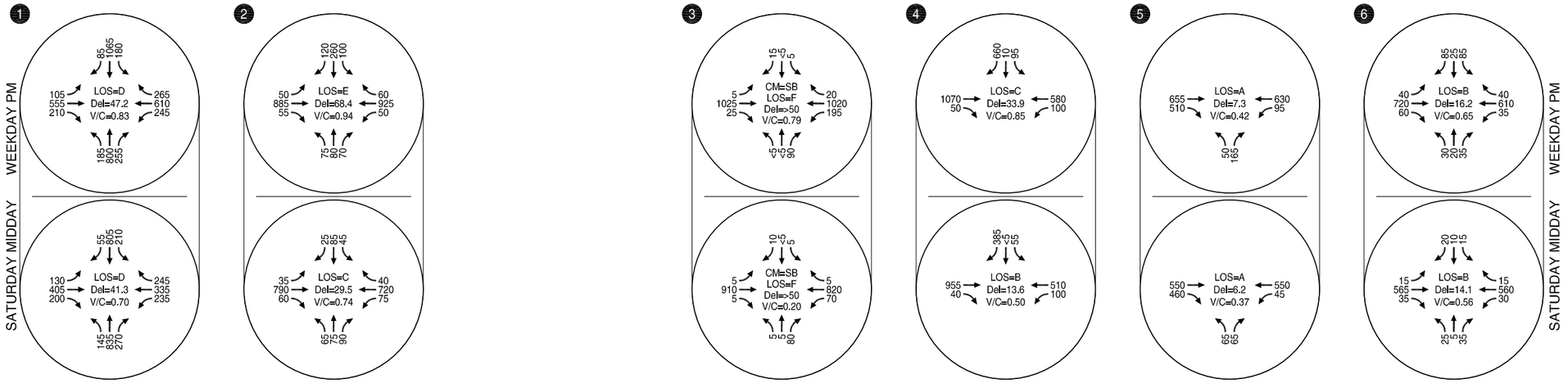
In addition to investigating the planned developments located within the study area, planned transportation improvement projects within the site vicinity were reviewed to identify how future traffic patterns may change within the 2007 and 2025 horizon years. Based on conversations with City and ODOT staff, although several funded transportation improvements were identified within the 20 year planning horizon, none are expected prior to 2008.

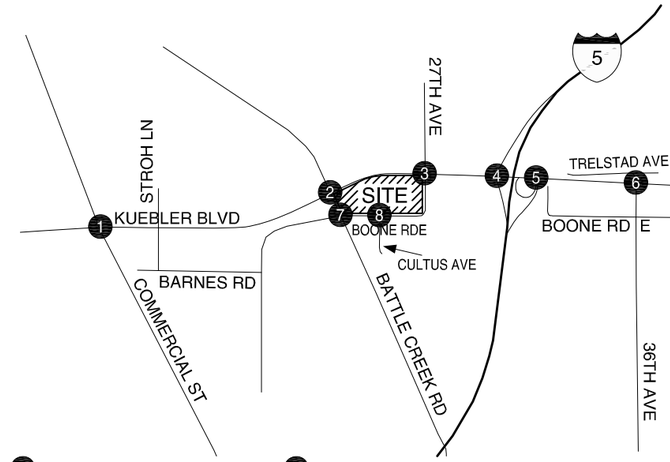
2007 Background Traffic Volumes

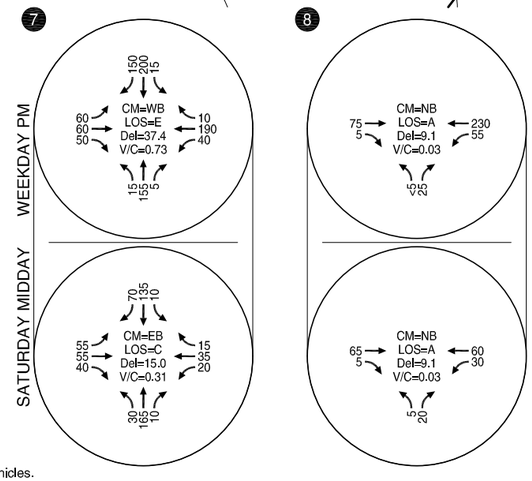
Year 2007 background traffic volumes were developed to account for regional traffic growth in the study area. An annual growth rate of 2 percent was applied to the study intersections. This growth factor was developed based on a review of historical traffic volumes, planned developments in the site vicinity, traffic forecasts taken from the May 2005 *Draft Kuebler Interchange Access Management Plan Operational and Safety Analyses* and *City of Salem Transportation System Plan* that were developed using the Salem/Keiser Area Transportation Study's (SKATS) EMME2 travel demand model, and direction from City of Salem staff. Figure 5 shows the resulting forecast year 2007 background traffic volumes during the weekday p.m. and Saturday midday peak hours respectively.

Traffic Operations Analysis

Using the weekday p.m. and Saturday midday peak hour turning movement volumes shown in Figure 5, an operational analysis was conducted at each study intersection to determine the 2007 background traffic intersection operations. As indicated by this figure, the background traffic analysis determined that all of the study intersections are forecast to continue to operate acceptably during both the weekday p.m. and Saturday midday peak hours with the exception of Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections. Roadway improvements would be required to return these intersections to acceptable levels of service under the year 2007 background traffic conditions. *Appendix "G" contains the year 2007 background traffic operations worksheets.*







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LEGEND

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V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Note: Volumes shown have been rounded to the nearest five vehicles.

2007 BACKGROUND TRAFFIC CONDITIONS
WEEKDAY PM & SATURDAY MIDDAY PEAK HOURS
SALEM, OREGON

FIGURE 5

Kittelson & Associates, Inc.
Transportation Engineering / Planning

City of Salem Improvements - Kuebler Boulevard Improvement Project

Based on conversations with City staff, the City of Salem has received authorization for federal funds towards improving Kuebler Boulevard from I-5 through Battle Creek Road. These are funded improvements on the City's Capital Improvement Program (CIP). The design phase for the *Kuebler Boulevard Improvement Project* is currently underway and project completion is expected in 2008 according to City staff. This improvement project includes the following:

- A second westbound travel lane, curb, and sidewalk from the I-5 southbound ramp terminal to approximately 1,600 feet west of Battle Creek Road.

- Intersection improvements at Kuebler Boulevard/Battle Creek Road to add exclusive right-turn lanes along the northbound, southbound and westbound approaches.

- A new traffic signal at the Kuebler Boulevard/27th Avenue intersection.

- Traffic signal interconnect along Kuebler Boulevard from the I-5 northbound ramp terminal to Commercial Street.

These improvements are identified as needed improvements in the City of Salem Transportation System Plan (TSP) and by other transportation studies and are shown in Figure 6. Table 4 shows the resulting forecast year 2007 mitigated background traffic operations during the weekday p.m. and Saturday midday peak hours.

Table 4
2007 Background Traffic Conditions
Mitigation Treatments and Resultant Intersection Operations

Intersection	Condition	V/C Ratio / LOS	Funded Improvements	Resultant V/C Ratio / LOS
Kuebler Blvd/ Battle Creek Rd	Weekday PM	0.94 / E	- Provide a second westbound through lane - Add exclusive right-turn lanes along the northbound, southbound, and westbound approaches	0.90 / D
	Saturday Midday	0.74 / C		0.73 / C
Kuebler Blvd/ 27th Ave	Weekday PM	> 1.0 / F [1]	- Signalize intersection - Provide a second westbound through lane	0.51 / B
	Saturday Midday	0.14 / F [1]		0.36 / A

[1]V/C Ratio / LOS represents the critical minor street movement at the intersection.

As indicated above in Table 4, the mitigated background traffic analysis determined that all of the study intersections are forecast to operate acceptably. *Appendix "H" contains the year 2007 mitigated background traffic operations worksheets.*

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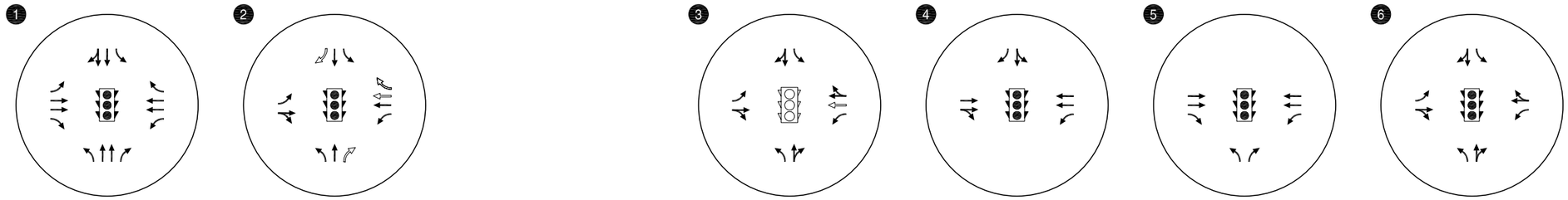
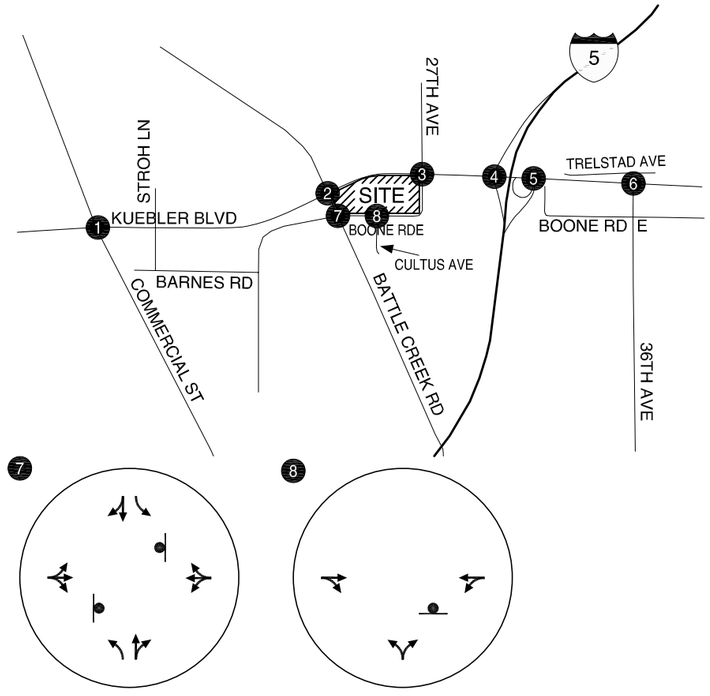




LEGEND

OVL - OVERLAP

- STOP SIGN

- TRAFFIC SIGNAL

- PROPOSED TRAFFIC SIGNAL

- PROPOSED TRAVEL LANE

CITY OF SALEM FUNDED ROADWAY NETWORK IMPROVEMENTS (KUEBLER BOULEVARD IMPROVEMENT PROJECT)
SALEM, OREGON

FIGURE 6

ZONING SCENARIOS

For the purposes of this analysis, the following reasonable maximum development scenarios were used to compare the traffic impacts of the existing zoning to the proposed zoning scenario.

Existing Zoning

The existing zoning on the 28.4-acre site is a combination of CO (5-acres) and RA (23.4-acres). The City of Salem's Revised Code related to zoning was used for developing a reasonable worst-case development scenario. The existing zoning scenario was developed based on the following criteria:

- 5-acres of "CO" zoned property, 10 acres is designated for Commercial by the Salem Comprehensive Plan (5 acres remain zoned RA).
    - Average employment density of 31 jobs per acres based on the May 2005 *Draft Kuebler Interchange Access Management Plan Operational and Safety Analyses*.

- 23.4-acres of "RA" zoned property, 18.4 acres is currently designated as Developing Residential by the Salem Comprehensive Plan, but proposed to be changed to Commercial.
    - Single-family detached homes per City of Salem Development Code.
    - Minimum lot area permitted for single family detached homes is 4,000 square feet resulting in a residential density of 10.89 units per acre.

Proposed Zoning

For purposes of this TIA, the zoning designation for the 28.4-acre subject property is proposed to be changed from CO/RA to CO/CR, however, the current plan and zone change application applies to 18.4 acres. The TIA assumes a zone change of 23.4 acres of RA to be changed to CR. The 5-acres of CO will remain the same. The proposed zoning scenario was developed based on the CR zone requirements included in the City of Salem Development Code. The subject property was assumed to include 290,000 square-feet of shopping center space and 24,000 square-feet of medical-dental office space, and represents a reasonable worse-case development scenario under the proposed zoning.

TRIP GENERATION

The trip generation estimates for the two zoning scenarios (existing and proposed) were derived from empirical observations at other similar developments. These observations are summarized in the standard reference manual, *Trip Generation, 7th Edition*, published by the Institute of Transportation Engineers (4).

Under the proposing zoning scenario, a percentage of trips generated by the two land uses can be classified as internal trips (trips generated to other uses within the development that result in one joint trip to the site). To quantify the impact of these trips, the methodology outlined in the Institute of Transportation Engineers' *Trip Generation Handbook* (5). In addition to internal trips, it was also assumed that a portion of the total site generated trips would include pass-by trips (trips currently on the adjacent roadways that would be drawn to the new development). To quantify the impact of these trips, pass-by rate data was obtained from the Institute of Transportation Engineer's *Trip Generation Handbook.*

Table 5 summarizes the estimated site trip generation during a typical weekday as well as during the weekday p.m. and Saturday midday peak hours for the existing and proposed zoning scenarios (all trip ends have been rounded to the nearest five trips).

Table 5
Estimated Trip Generation

Land Use	ITE Code	Size	Daily Trips	Weekday PM Peak Hour Trips			Saturday Midday Peak Hour Trips		
				Total	In	Out	Total	In	Out
Existing Zoning									
Medical-Dental Office Building	720	310 Employees	2,750	325	110	215	270	155	115
Single-Family Detached Housing	210	190 Units	1,825	190	120	70	180	100	80
Total Net New Trips			**4,575**	**515**	**230**	**285**	**450**	**255**	**195**
Proposed Zoning									
Shopping Center	820	290,000 Sq ft.	13,570	1,260	685	745	1,730	900	830
Pass-by Trips (34% Weekday,26% Saturday)			*(4,610)*[1]	*(430)*	*(215)*	*(215)*	*(450)*	*(225)*	*(225)*
Medical Dental Office Building	720	24,000 Sq ft.	870	90	25	65	85	50	35
Internal Trips (20%)			*(170)*	*(20)*	*(5)*	*(15)*	*(15)*	*(10)*	*(5)*
Total Site Generated Trips			14,440	1,350	630	720	1,815	950	865
- Internal Trips			*(170)*	*(20)*	*(5)*	*(15)*	*(15)*	*(10)*	*(5)*
- Pass-by Trips			*(4,610)*	*(430)*	*(215)*	*(215)*	*(450)*	*(225)*	*(225)*
Total Net New Trips			**9,660**	**900**	**410**	**490**	**1,350**	**715**	**635**

[1]Due to lack of ITE data, daily pass-by trip rates were obtained from weekday p.m. peak hour data.

Under the existing zoning, the site could generate up to 4,575 net new daily weekday trips on the adjacent street system. Of these trips, approximately 515 net new trips would occur during the weekday p.m. peak hour and 450 net new trips would occur during the Saturday midday peak hour. Under the proposed zoning, the site could generate up to 9,660 net new daily weekday trips on the adjacent street system. Of these trips, approximately 900 net new trips would occur during the weekday p.m. peak hour and 1,350 net new trips would occur during the Saturday midday peak hour.

TRIP DISTRIBUTION

The distribution of site-generated trips onto the study area roadway system was estimated based on an examination of the transportation facilities within the site vicinity, existing peak hour directional travel characteristics, an understanding of the surrounding roadway network, and select zone model plots from the Salem-Keizer Area Transportation Study (SKATS). This trip distribution pattern was reviewed and approved for use by the City of Salem. The resulting estimated trip distribution pattern is illustrated in Figure 7.

Figures 8 and 9 show the trip assignment for the existing zoning trip generation and the proposed zoning trip generation, respectively.

ACCESS SCENARIO

Access to the subject property was assumed via two full site driveways, one onto 27th Avenue and the other onto Boone Road, opposite of Cultus Avenue. This access scenario was evaluated under both zoning conditions.

In addition, Pactrust is proposing a right-in only driveway along Kuebler Boulevard to improve vehicular access into the site. Providing limited access off Kuebler Boulevard would provide for a more convenient entrance into the site and would also reduce traffic along Battle Creek Road (south of Kuebler Boulevard) and Boone Road (east of Battle Creek Road). This access scenario was evaluated under the proposed zoning scenario.

2007 TOTAL TRAFFIC CONDITIONS

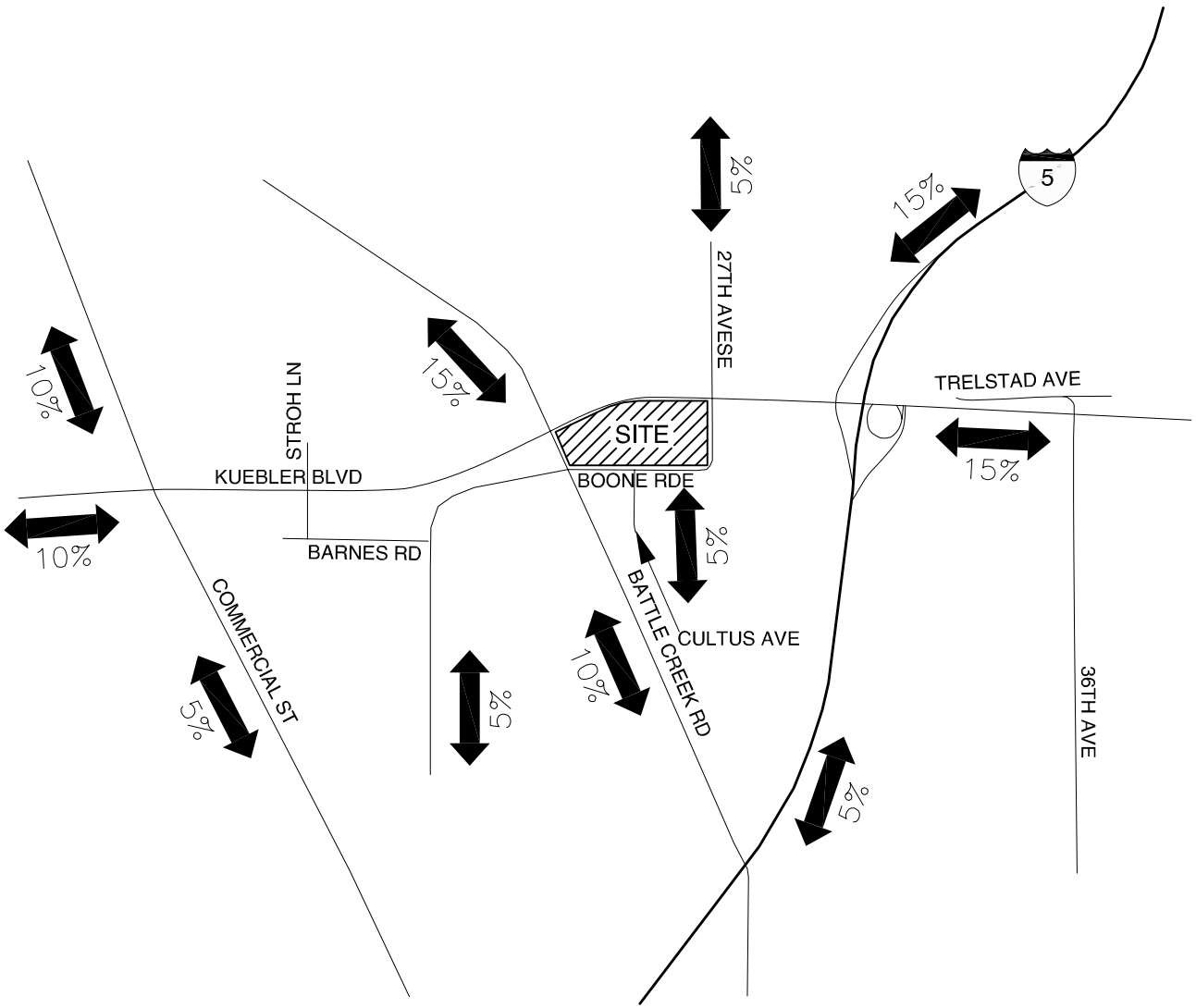
The 2007 total traffic conditions analysis forecasts how the study area's transportation system will operate with the reasonable maximum development of the existing CO/RA zoning scenario and the proposed CO/CR zoning scenario.

Existing Zoning

For the year 2007 total traffic analysis under the existing CO/RA zoning scenario, the 2007 background traffic volumes for the weekday p.m. and Saturday midday peak hours shown in Figure 5 were added to the existing zoning site-generated traffic shown in Figure 8 to arrive at the existing zoning 2007 total traffic volumes shown in Figure 10.

Figure 10 also provides a summary of the forecast total traffic operations analyses associated with full build-out of a reasonable maximum development of the existing CO/RA zoning scenario. As indicated by the respective figure, the following intersections are forecast to operate over City and ODOT standards:

- Boone Road/Battle Creek Road
- Kuebler Boulevard/I-5 Southbound Ramp



ESTIMATED TRIP DISTRIBUTION PATTERN
SALEM, OREGON

FIGURE 7

Kittelson & Associates, Inc.
Transportation Engineering / Planning

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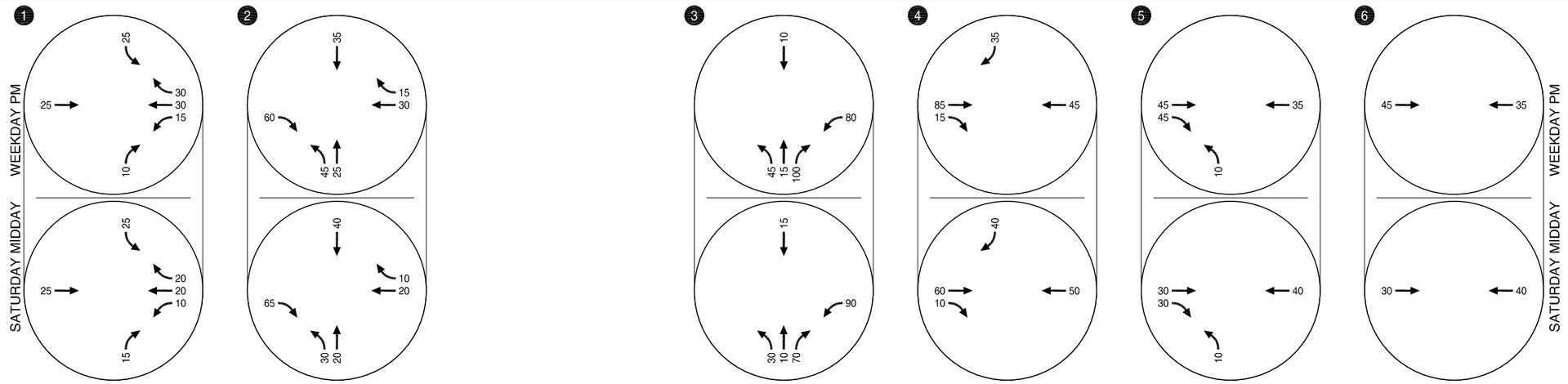
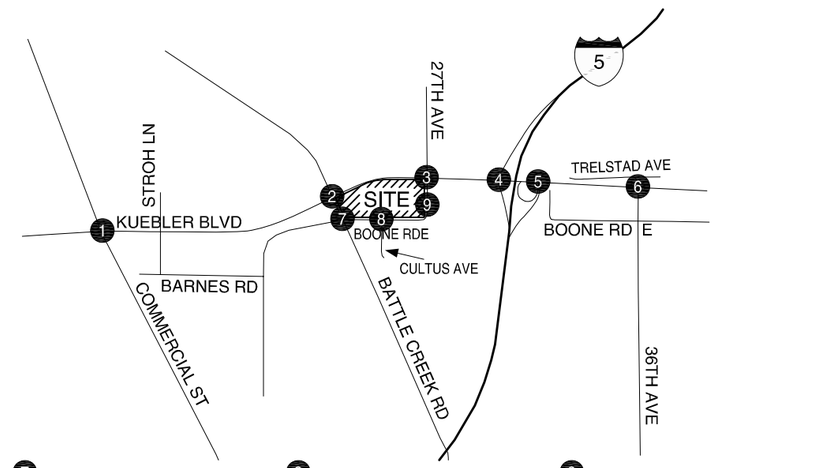
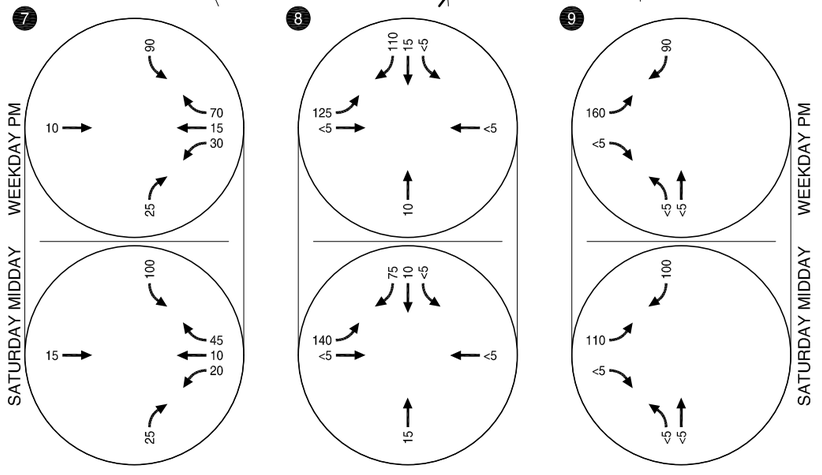




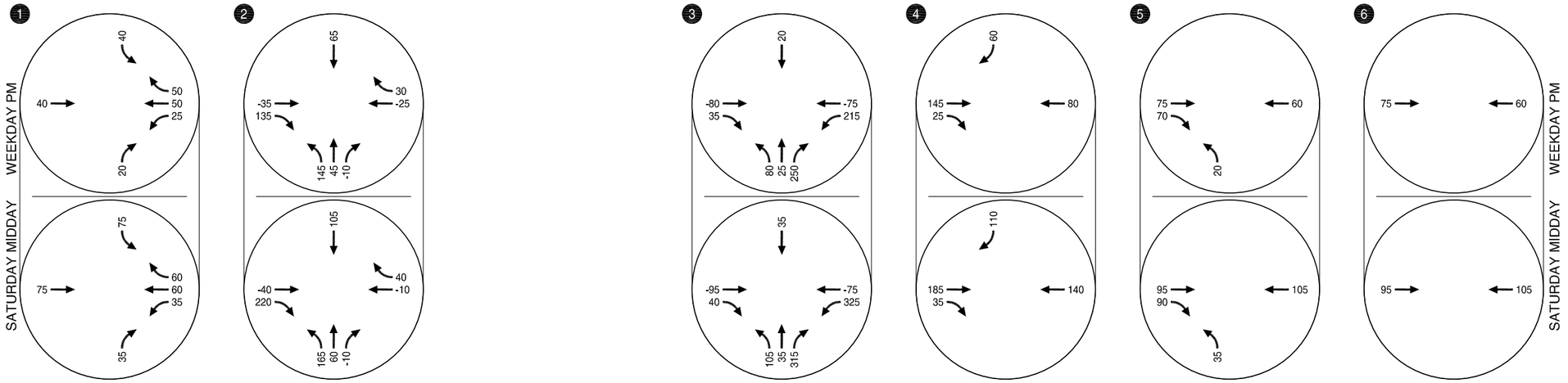


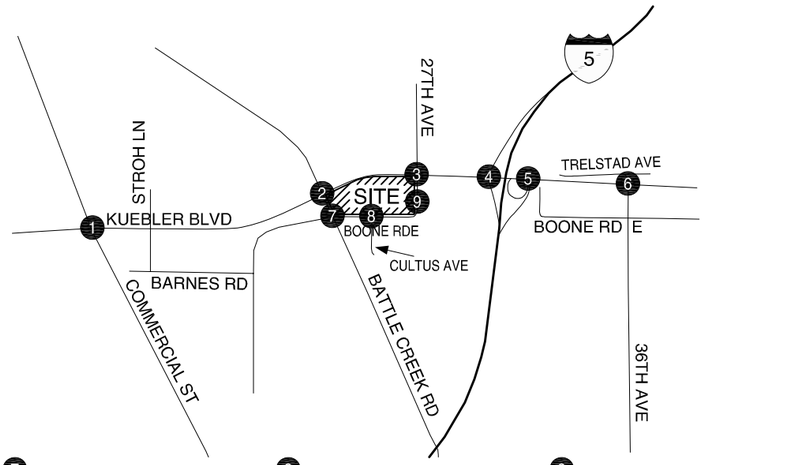
Note: Volumes shown have been rounded to the nearest five vehicles.

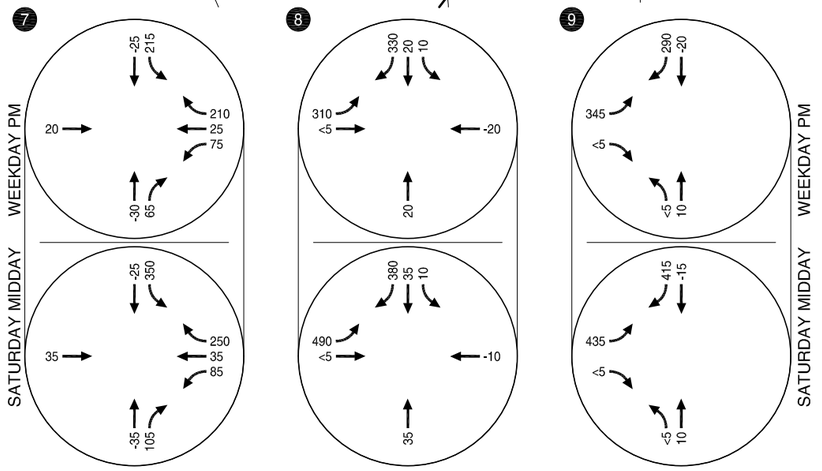
EXISTING ZONING SITE GENERATED TRAFFIC
WEEKDAY PM & SATURDAY MIDDAY PEAK HOURS
SALEM, OREGON

FIGURE
8

Kittelson & Associates, Inc.
Transportation Engineering / Planning





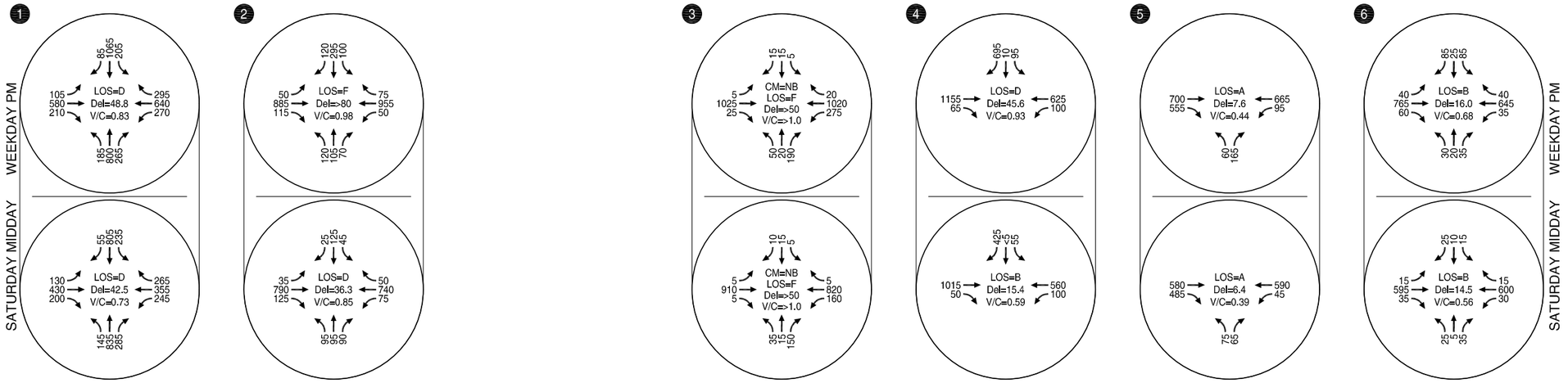


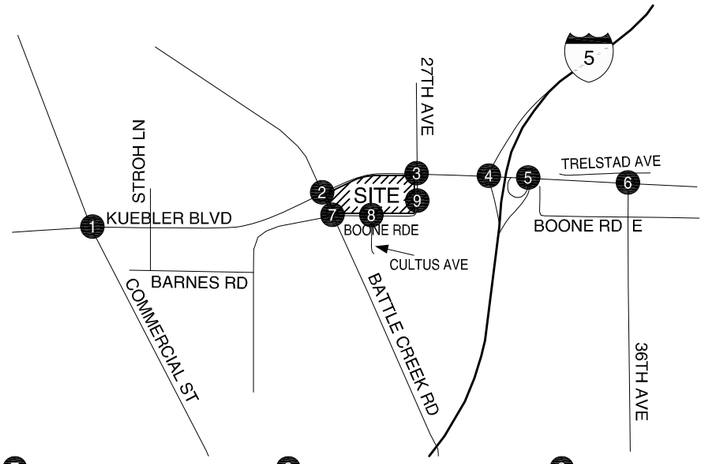
Note: Volumes shown have been rounded to the nearest five vehicles.

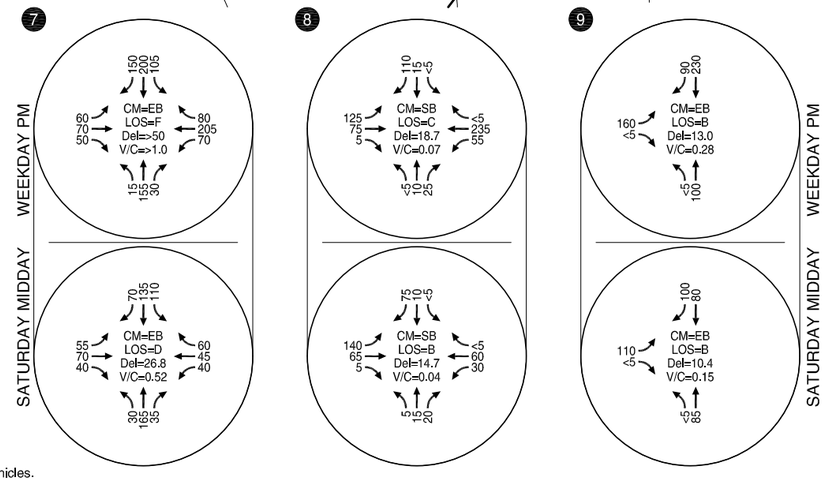
PROPOSED ZONING SITE GENERATED TRAFFIC
WEEKDAY PM & SATURDAY MIDDAY PEAK HOURS
SALEM, OREGON

FIGURE
9

Kittelson & Associates, Inc.
Transportation Engineering / Planning







(NO SCALE)

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
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V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Note: Volumes shown have been rounded to the nearest five vehicles.

EXISTING ZONING 2007 TOTAL TRAFFIC CONDITIONS
WEEKDAY PM & SATURDAY MIDDAY PEAK HOURS
SALEM, OREGON

FIGURE **10**

In addition, the following intersections are forecast to continue to operate unacceptably from 2005 existing traffic conditions.

- Kuebler Boulevard/Battle Creek Road
- Kuebler Boulevard/27th Avenue

Improvements have been identified at all of these locations and will be further discussed below in the following section. *Appendix "I" contains the existing zoning 2007 total traffic operations worksheets.*

Mitigations

In addition to the City of Salem improvements to Kuebler Boulevard, additional improvements are needed along Kuebler Boulevard and at the Boone Road/Battle Creek Road and Kuebler Boulevard/I-5 southbound ramp intersections.

- **Kuebler Boulevard** - An additional eastbound through lane is needed along Kuebler Boulevard from west of Battle Creek Road to the I-5 southbound ramp to accommodate forecast traffic volumes.
- **Boone Road / Battle Creek Road -** A traffic signal is needed at this location to accommodate forecast traffic demands. The critical eastbound minor street movement is forecast to operate at LOS "F" and over capacity during the p.m. peak hour. A signal warrant analysis was conducted to identify the need for a traffic signal under existing zoning build-out conditions. The intersection meets Warrant 2 (four-hour vehicular volume) and Warrant 3 (peak hour volume), however, does not meet Warrant 1 (eight-hour vehicular volume). *Appendix "J" contains the Boone Road/Battle Creek Road signal warrant analysis worksheet.*
- **Kuebler Boulevard / I-5 Southbound Ramp** - This intersection is forecast to operate at a v/c ratio of 0.93 during the weekday p.m. peak hour, exceeding ODOT's minimum v/c ratio of 0.85. The heavy southbound right turn movement from the off-ramp to westbound Kuebler Boulevard requires mitigation in the near-term. ODOT has identified the need for improvements at both ramp terminal intersections, and is currently in the process of securing funding for improvement projects. Although specific improvements have not been finalized, the need for duel southbound right-turn lanes is recommended to accommodate the heavy movement. Assuming the widening of Kuebler Boulevard to two westbound through lanes from the I-5 Southbound Ramp to Battle Creek Road, the addition of a second southbound right-turn lane can be accommodated in by re-striping the southbound shared left/through lane to a shared left/through/right lane.

Widening of Kuebler Boulevard, the improvements identified for the intersections of Boone Road/Battle Creek Road and Kuebler Boulevard/I-5 southbound ramp, and the *Kuebler Boulevard Improvement Project* would be required to return these intersections to acceptable operations under existing zoning 2007 total traffic conditions. Table 6 summarizes the resulting existing zoning 2007 mitigated total traffic operations during the weekday p.m. and Saturday midday peak hours.

Table 6
Existing Zoning 2007 Total Traffic Conditions
Mitigation Treatments and Resultant Intersection Operations

Intersection	Condition	V/C Ratio / LOS	City of Salem Improvements (V/C Ratio / LOS)	Proposed Improvements	Resultant V/C Ratio / LOS
Kuebler Blvd/ Battle Creek Rd	Weekday PM	0.98 / F	0.93 / D	- Provide a second eastbound through lane.	0.65 / D
	Saturday Midday	0.85 / D	0.84 / C		0.52 / C
Kuebler Blvd/ 27th Ave	Weekday PM	> 1.0 / F [1]	0.88 / C	- Provide a second eastbound through lane.	0.56 / C
	Saturday Midday	>1.0 / F [1]	0.69 / C		0.42 / B
Boone Rd/ Battle Creek Rd	Weekday PM	>1.0 / F[1]	>1.0 / F[1]	- Signalize intersection - Provide an exclusive westbound right-turn lane.	0.45 / C
	Saturday Midday	0.52 / D	0.52 / D		0.34 / C
Kuebler Blvd/ I-5 Southbound Ramp	Weekday PM	0.93 / D	0.93 / D	- Re-striping the southbound shared left/through lane to a shared left/through/right lane.	0.76 / C
	Saturday Midday	0.59 / B	0.59 / B		0.55 / B

[1]V/C Ratio / LOS represents the critical minor street movement at the intersection.

As indicated in Table 6, the mitigated existing zoning total traffic analysis determined that all of the study intersections are forecast to operate acceptably. *Appendix "K" contains the existing zoning 2007 mitigated total traffic operations worksheets.*

Proposed Zoning

For the year 2007 total traffic analysis under the proposed CO/CR zoning scenario, the 2007 background traffic volumes for the weekday p.m. and Saturday midday peak hours shown in Figure 5 were added to the proposed zoning site-generated traffic shown in Figure 9 to arrive at the proposed zoning 2007 total traffic volumes shown in Figure 11.

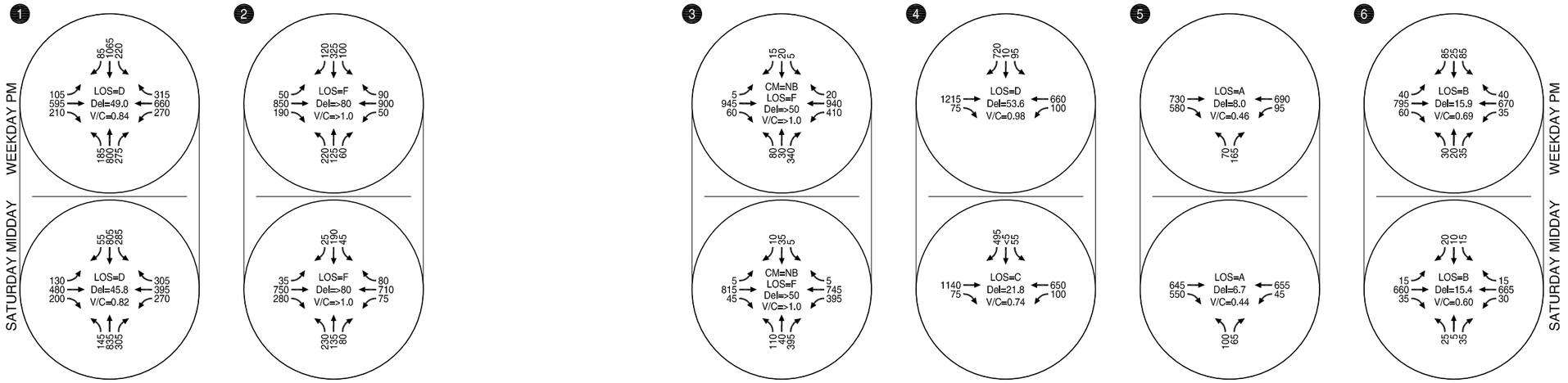
Figure 11 provides a summary of the forecast total traffic operations analyses associated with full build-out of the site under the proposed CO/CR zoning scenario. As indicated in the respective figure, the following intersections are forecast to continue to operate unacceptably from 2005 existing traffic conditions.

- Kuebler Boulevard/Battle Creek Road
- Kuebler Boulevard/27th Avenue

Similar to the existing zoning scenario, the following intersections are forecast to operate unacceptably.

- Boone Road/Battle Creek Road
- Kuebler Boulevard/I-5 Southbound Ramp

All other study intersections are forecast to continue to operate acceptably during the weekday p.m. and Saturday midday peak hours with the exception of the Boone Road/Cultus Avenue-Site Driveway intersection. *Appendix "L" contains the proposed zoning 2007 total traffic operations worksheets.*



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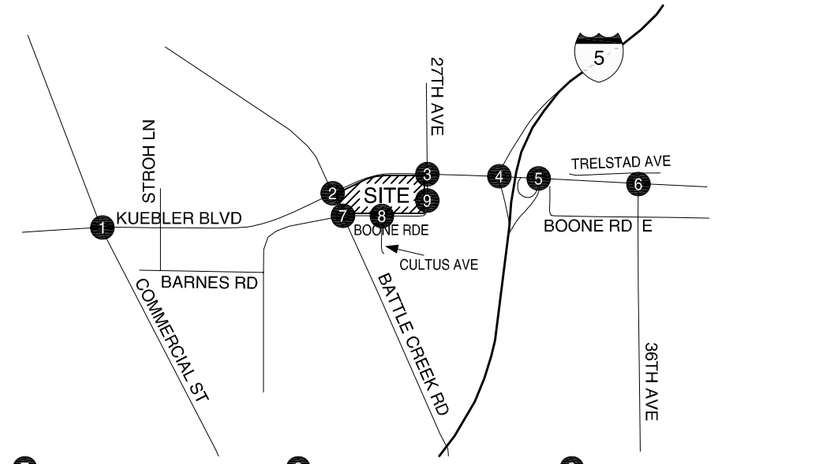

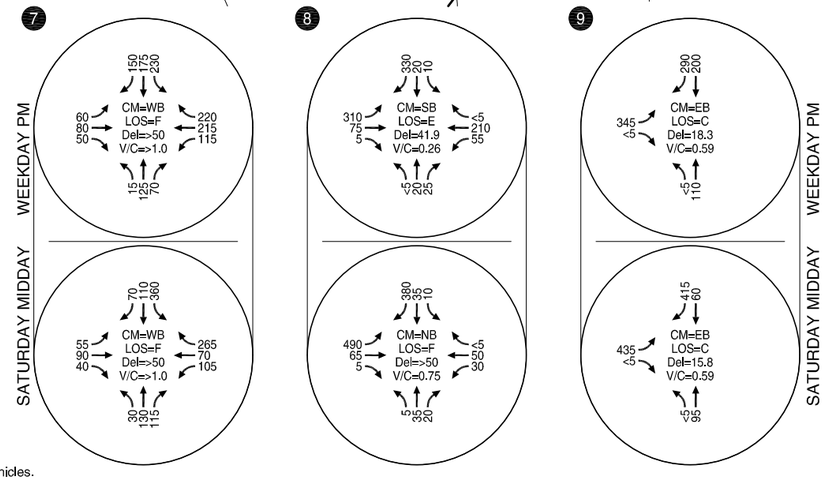

LEGEND

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LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
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V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Note: Volumes shown have been rounded to the nearest five vehicles.

PROPOSED ZONING 2007 TOTAL TRAFFIC CONDITIONS
WEEKDAY PM & SATURDAY MIDDAY PEAK HOURS
SALEM, OREGON

FIGURE 11

Boone Road / Cultus Avenue-Site Driveway

The minor street northbound movement at the Boone Road/Cultus Avenue-Site-Driveway intersection is forecast to operate at LOS "F" during the Saturday midday peak hour. Northbound motorists wanting to turn left or go straight will likely experience long delays during peak conditions due to the heavy eastbound movement into the proposed site. However, adequate capacity will be available for both northbound and southbound movements.

Mitigations

The same roadway improvements identified under existing zoning 2007 total traffic conditions would be needed to meet City of Salem and ODOT operating standards under proposed zoning 2007 total traffic conditions. Figure 12 shows the existing and proposed zoning recommended roadway network. Table 7 summarizes the resulting existing zoning 2007 mitigated total traffic operations during the weekday p.m. and Saturday midday peak hours.

Table 7
Proposed Zoning 2007 Total Traffic Conditions
Mitigation Treatments and Resultant Intersection Operations

Intersection	Condition	V/C Ratio / LOS	City of Salem Improvements (V/C Ratio / LOS)	Proposed Improvements	Resultant V/C Ratio / LOS
Kuebler Blvd/ Battle Creek Rd	Weekday PM	> 1.0 / F [1]	> 1.0 / F [1]	- Provide a second eastbound through lane.	0.73 / D
	Saturday Midday	> 1.0 / F [1]	> 1.0 / F [1]		0.70 / C
Kuebler Blvd/ 27th Ave	Weekday PM	> 1.0 / F [1]	0.96 / D	- Provide a second eastbound through lane.	0.66 / C
	Saturday Midday	> 1.0 / F [1]	0.88 / D		0.62 / C
Boone Rd/ Battle Creek Rd	Weekday PM	> 1.0 / F [1]	> 1.0 / F [1]	- Signalize intersection - Provide an exclusive westbound right-turn lane.	0.57 / C
	Saturday Midday	> 1.0 / F [1]	> 1.0 / F [1]		0.60 / C
Kuebler Blvd/ I-5 Southbound Ramp	Weekday PM	0.98 / D	0.98 / D	- Re-striping the southbound shared left/through lane to a shared left/through/right lane.	0.80 / C
	Saturday Midday	0.74 / C	0.74 / C		0.61 / B

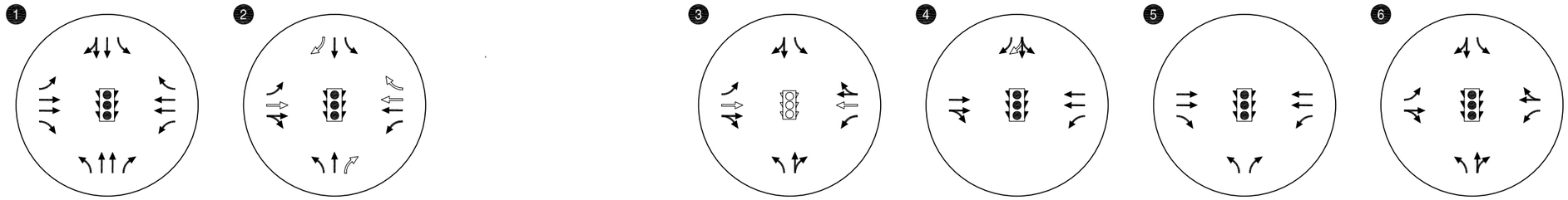
[1]V/C Ratio / LOS represents the critical minor street movement at the intersection.

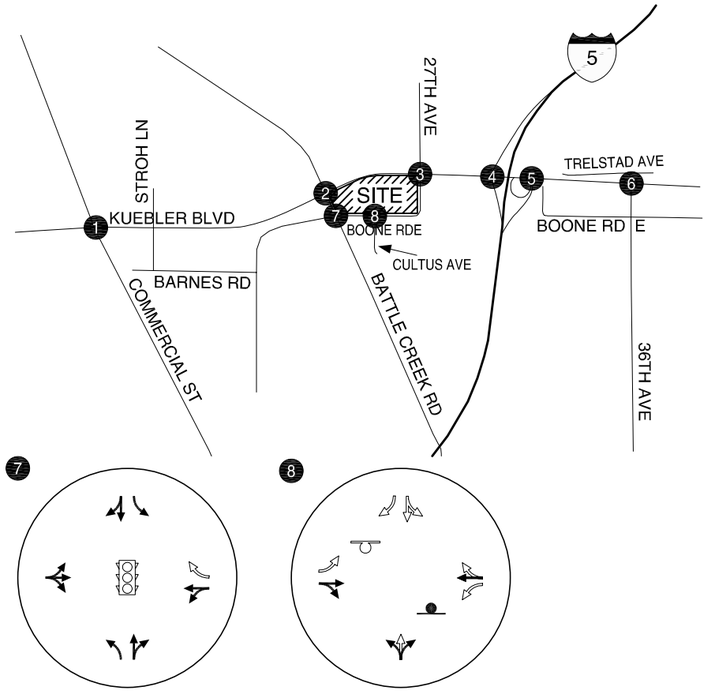
As shown in Table 7, assuming the improvements shown in Figure 12, all of the study intersections are forecast to operate acceptably. *Appendix "M" contains the proposed zoning 2007 mitigated total traffic operations worksheets.*

Kuebler Boulevard / 27th Avenue Intersection

Based on the results of the existing zoning and proposed zoning 2007 total traffic conditions analysis, the Kuebler Boulevard/27th Avenue intersection is forecast to meet City of Salem operating standards assuming signalization and widening of Kuebler Boulevard to 5-lanes. However, to better service the northbound approach along 27th Avenue and minimize vehicle queues, it is recommended that an exclusive northbound right-turn lane and overlap phasing be provided at the Kuebler Boulevard/27th Avenue intersection.

(NO SCALE)





LEGEND

OVL - OVERLAP

- STOP SIGN

- TRAFFIC SIGNAL

- PROPOSED TRAFFIC SIGNAL

- PROPOSED TRAVEL LANE

EXISTING AND PROPOSED ZONING RECOMMENDED ROADWAY NETWORK AND TRAFFIC CONTROL DEVICES SALEM, OREGON

FIGURE 12

Queuing Analysis

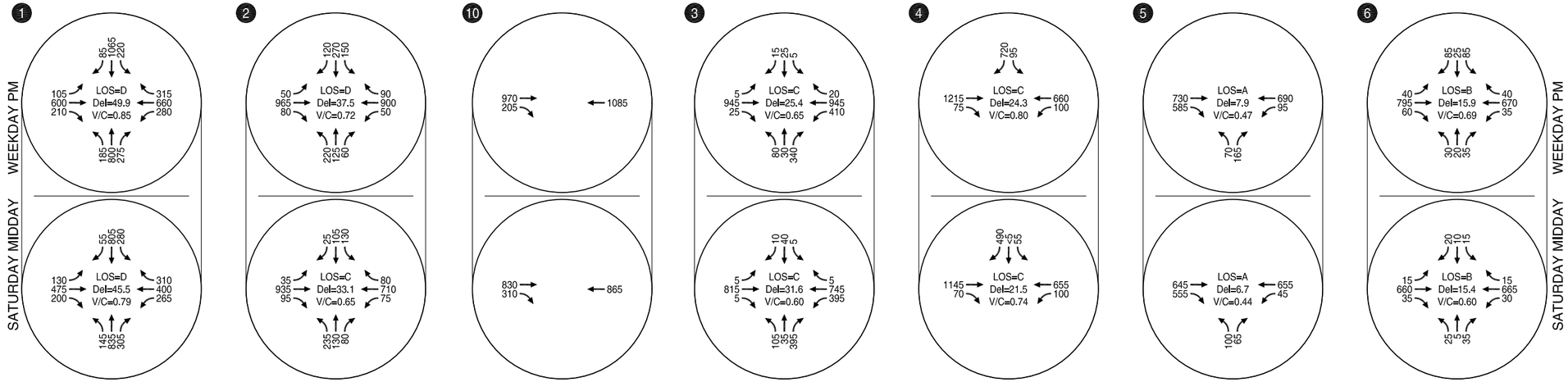
A 95th percentile queuing analysis, based on SimTraffic, was performed at the site-access driveways and adjacent intersections to ensure that adequate vehicle storage will be available with full site build-out. Table 8 summarize the results of the signalized and unsignalized queuing analyses for proposed zoning full site build-out traffic conditions.

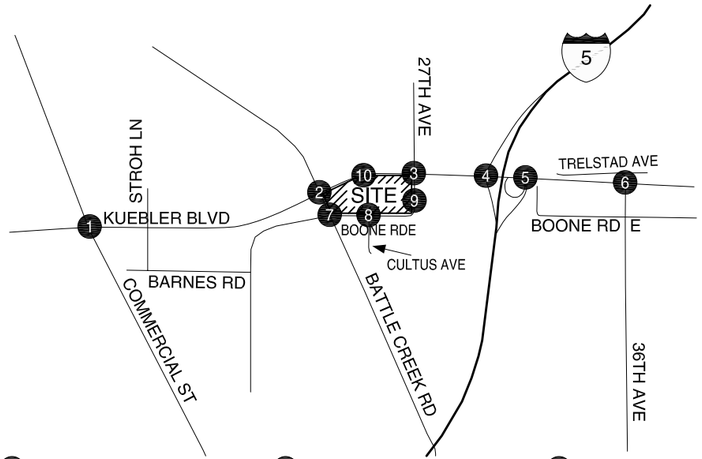
Table 8
Estimated 95th Percentile Queue Lengths

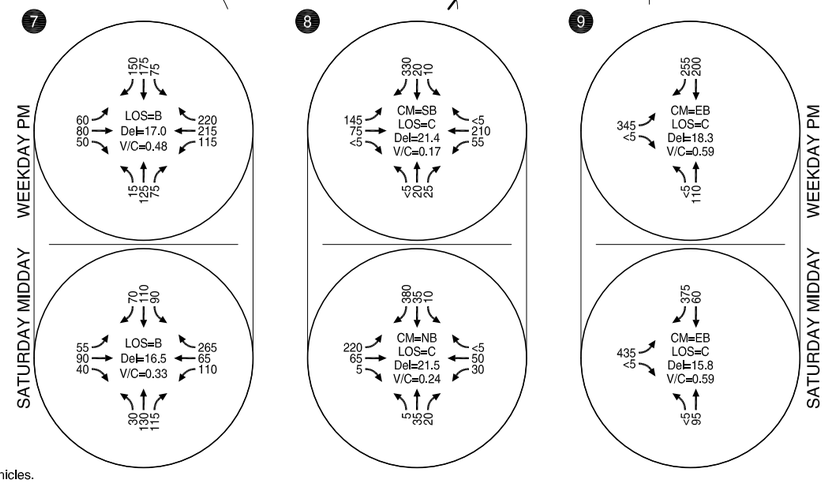
Intersection	Movement & Approach	Weekday PM Peak Hour (ft)	Saturday Mid-Day Peak (ft)	Available Storage (ft)	Adequate Storage Available?
SE Kuebler Boulevard at Battle Creek Rd	NB LT	286	292	300 [1]	Yes
	NB TH/RT	176	206	400	Yes
	WB LT	158	163	200	Yes
	WB TH/RT	560	376	700+	Yes
Boone Road at Battle Creek Road	SB LT	224	311	350 [1]	Yes
	SB TH/RT	192	244	400	Yes
	WB LT/TH	417	159	500+	Yes
	WB RT	162	127	225[1]	Yes
SE Kuebler Boulevard at 27th Avenue	NB LT	137	156	225 [1]	Yes
	NB TH/RT	358	378	400	Yes
	EB LT	54	23	200	Yes
	EB TH/RT	484	455	700+	Yes
	WB LT	371	260	400 [1]	Yes
	WB TH/RT	450	455	700+	Yes
SE Kuebler Boulevard at I-5 Southbound Ramp	WB LT	114	111	250	Yes
	WB TH	172	158	700+	Yes
	EB TH/RT	512	437	700+	Yes
SE Kuebler Boulevard at I-5 Northbound Ramp	EB TH	556	321	700+	Yes
Boone Road at Site Driveway	EB LT	92	73	200 [1]	Yes

[1] Proposed distance to be constructed.

As shown in Table 8, the queuing analysis determined that with proposed off-site transportation improvements in place, sufficient lane storage will exist at the study intersections, as well as the proposed site-access driveways to Kuebler Boulevard, 27th Avenue, and Boone Road. *Appendix "N" contains the queuing analysis summary worksheets.*







(NO SCALE)

LEGEND

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V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Note: Volumes shown have been rounded to the nearest five vehicles.

PROPOSED ZONING 2007 MITIGATED TOTAL TRAFFIC CONDITIONS WITH KUEBLER ACCESS (RIGHT-IN ONLY)
WEEKDAY PM & SATURDAY MIDDAY PEAK HOURS
SALEM, OREGON

FIGURE 13

Kittelson & Associates, Inc.
Transportation Engineering / Planning

Proposed Kuebler Right-In Driveway

Pactrust is proposing a right-in only driveway along Kuebler Boulevard to improve vehicular access into the site. Providing limited access off Kuebler Boulevard would provide for a more convenient entrance into the site and would also reduce traffic along Battle Creek Road (south of Kuebler Boulevard) and Boone Road (east of Battle Creek Road).

Figure 13 shows the proposed zoning 2007 mitigated traffic conditions with the proposed right-in access on Kuebler Boulevard. As evidenced by the figure, all of the study intersections were found to operate acceptably during the weekday p.m. and Saturday midday peak hour. In addition, a comparison of intersection operations at the Boone Road/Cultus Avenue-Site Driveway intersection with and without the proposed right-in only access reveals an improvement to that intersection. Table 9 shows a comparison of intersection operations with and without the proposed right-in only driveway under proposed zoning 2007 mitigated total traffic conditions.

Table 9
Comparison of Intersection Operations
Proposed Zoning 2007 Mitigated Total Traffic Conditions – With and Without Kuebler Driveway

Intersection	Condition	Critical Movement	Mitigated Conditions [1] V/C Ratio / LOS	Mitigated Conditions[1] w/ Right-In Access on Kuebler V/C Ratio / LOS
Boone Rd/ Cultus Ave	Weekday PM	Southbound	0.26 / E	0.17 / C
	Saturday Midday	Northbound	0.75 / F	0.24 / C

[1] Includes all improvements identified in Figure 12 – Existing and Proposed Zoning Recommended Roadway Network.

As shown in Table 9, both level of service and volume-to-capacity ratios for the minor street critical movements are forecast to improve with the proposed right-in access on Kuebler Boulevard. *Appendix "O" contains the proposed zoning 2007 mitigated (w/ Kuebler access) total traffic operations worksheets.*

PLANNING HORIZON YEAR TRAFFIC CONDITIONS

In land use cases involving an amendment to a local comprehensive plan, the Oregon Highway Plan Implementation Action 1F.2 anticipates an analysis of future year traffic conditions for either the planning horizon year as documented in the locally adopted Transportation System Plan (TSP), or a 15-year forecast, whichever is greater. Based on the long-range traffic forecasts contained in the City of Salem TSP, a forecast year of 2025 was selected for all study intersection located within the city limits of Salem.

Traffic Forecast Methodology

Year 2025 base traffic volumes were developed to account for regional growth and other planned developments in the study area. An annual growth rate of 1.0 percent was applied to the study intersections based a review of long-term traffic projections found in the following documents.

- Salem Transportation System Plan (6)
- DRAFT Kuebler Interchange Access Management Plan (7)

- Salem Regional Employment Center Transportation Impact Analysis (8)
- Sustainable Fairview Development Plan (9)

In addition, based on conversations with staff from the City of Salem, the traffic estimated to be generated from the Salem Regional Employment Center, Sustainable Fairview Development Plan, and potentially proposed Eagles Nest Development were incorporated into the impact analysis. It should be noted that the p.m. peak hour represents the peak travel time for all planned and potentially planned developments, and is therefore the only period studied in the 2025 analysis.

Once the future traffic volume forecasts were prepared for all study intersections to reflect planned growth and potential planned growth the City asked be included, site generated traffic could then be assigned to the study intersections to compare long-range traffic conditions for the existing CO/RA and proposed CO/CR zoning scenarios.

Funded Transportation Improvements

The TPR provides specific language and direction on how planned transportation improvements in adopted transportation system plans can be included in the long-range transportation impact analyses for proposed changes to comprehensive plans. Specifically, the TPR allows funded projects or projects designated as "reasonably likely to occur" within the planning horizon to be incorporated into the analysis of long-range traffic conditions. Based on coordination with City of Salem and ODOT staff the following projects are reasonably likely to occur.

- Kuebler Boulevard Improvement Project: Widen to provide a second westbound travel lane, curb, and sidewalk from the I-5 southbound ramp terminal to approximately 1,600 feet west of Battle Creek Road. Project also includes intersection improvements at Kuebler Boulevard/Battle Creek Road to add exclusive right-turn lanes along the northbound, southbound and westbound approaches, signalization of the 27th Avenue intersection, and traffic signal interconnect from the I-5 Northbound Ramp intersection to Commercial Street.

- I-5/Kuebler Interchange: Addition of a northbound on-ramp.

- Interstate 5 Phase 3: Bridge replacements, widen to six lanes between Highway 22 Santiam Interchange to Kuebler Interchange and interchange improvements.

Planned Improvements

As part of the Southeast Salem Area Transportation Study (SESATS), improvements are currently being developed to address operation and access issues throughout Southeast Salem, including the I-5/Kuebler interchange. The Kuebler Interchange Area Management Plan (IAMP) will address long-term strategies to improve this interchange and the surrounding local street network.

In addition, planned developments such as the Salem Regional Employment Center (SREC) have mitigation requirements that will also improve the existing transportation network. However, many of these transportation improvements have not been identified because project specifics are to be defined by current studies (i.e. I-5/Kuebler IAMP will address long-term strategies to improve this interchange). As such, only those improvements identified as funded transportation improvements were included in the baseline 2025 total traffic conditions analysis.

2025 Total Traffic Conditions

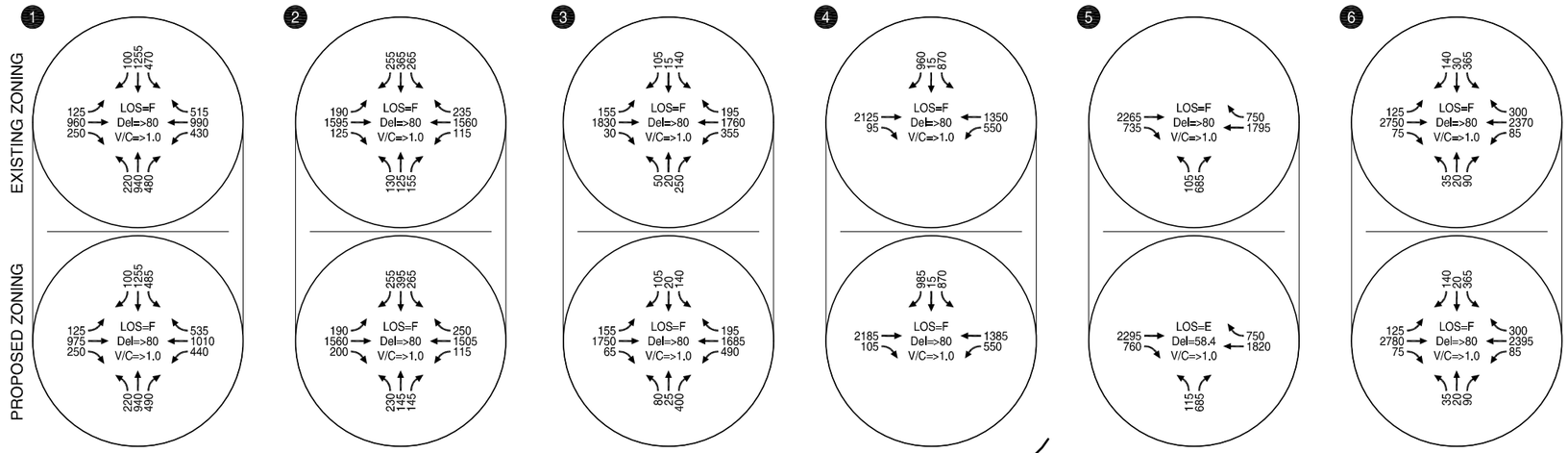
The total traffic conditions analysis forecasts how the study area's transportation system will operate by the planning horizon year 2025, if the 27-acre parcel were fully developed under the current CO/RA plan and zoning designation versus full development under the proposed CO/CR plan and zoning designation. Similar to the near-term analysis, the site generated traffic volumes for each land use scenario were added to the background traffic forecasts for the year 2025 to arrive at the total traffic volumes and conditions during the weekday p.m. peak hour, as shown in Figure 14 for the respective zoning scenarios.

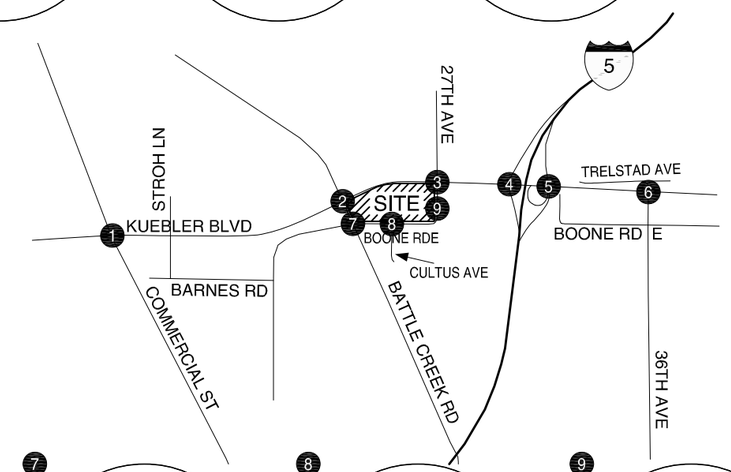
As shown in Figure 14, all of the signalized study intersections along Kuebler Boulevard and the Battle Creek Road/Boone Road intersection are forecast to operate at levels which do not meet the jurisdictional standards of the City of Salem or ODOT during the weekday p.m. peak hour, assuming reasonable "worst-case" development scenarios for the existing CO/RA and proposed CR zoning designation. *Appendix "P" contains the planning horizon year traffic level-of-service worksheets for both plan and zoning scenarios.*

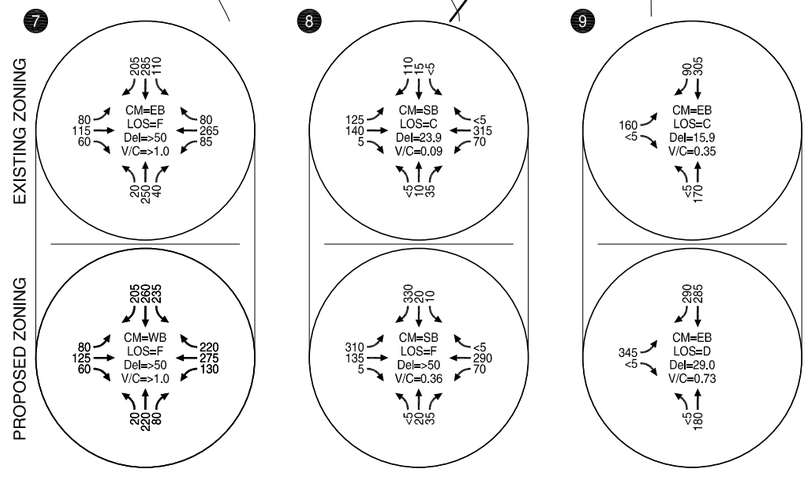
In land use cases involving an amendment to a local comprehensive plan, the Oregon Highway Plan Implementation Action 1F.6 states that in situations where the intersection volume-to-capacity ratio exceeds the ODOT mobility standard, the performance of the intersection shall not be degraded further. Additionally, the policy states that if an amendment to a comprehensive plan increases the volume-to-capacity ratio further, it will significantly affect the facility.

The TPR also contains language similar to the OHP Implementation Action 1F.6. Specifically OAR 660-012-0060 section 1(c)(C) states that a plan or land use regulation amendment significantly affects a transportation facility if it would "worsen the performance of an existing intersection or planned transportation facility that is otherwise projected to perform below the minimum acceptable performance standard identified in the TSP or comprehensive plan."

Based on the interpretations of OHP Action 1F.6 and the TPR, and results of the operations analysis, it can be deduced that the proposed CR zoning scenario affects all of the study intersections. To mitigate these intersections, the TPR states in OAR 660-012-0060 Section 3(c) that a local government may approve an amendment that would significantly affect an existing transportation facility, where a development will mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility.







(NO SCALE)

LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Note: Volumes shown have been rounded to the nearest five vehicles.

EXISTING AND PROPOSED ZONING 2025 TOTAL TRAFFIC CONDITIONS (CITY OF SALEM AND ODOT FUNDED IMPROVEMENTS)
WEEKDAY PM PEAK HOUR
SALEM, OREGON

FIGURE 14

Table 10 below summarizes the exact operational conditions under both land use scenarios, including a detailed accounting of the intersection v/c ratios and summarizes the intersection improvements needed to return these intersections to existing zoning operations to avoid further degradation under proposed CR zoning 2025 total traffic conditions. *Appendix "Q" contains the 2025 mitigated total traffic operations worksheets.*

Table 10
Intersection Improvements and Resultant Intersection Operations
Year 2025 Weekday PM Peak Hour

Intersection	Existing CO/RA Zoning V/C Ratio / LOS	Proposed CO/CR Zoning V/C Ratio / LOS	Improvements	Resultant V/C Ratio / LOS
Kuebler Blvd/ Commercial St	1.33 / F	1.35 / F	- Signal timing adjustments	1.31 / F
Kuebler Blvd/ Battle Creek Rd	1.52 / F	1.66 / F	- Provide a second eastbound through lane.	1.15 / F
Kuebler Blvd/ 27th Ave	1.80 / F	2.02 / F	- Provide a second eastbound through lane.	1.48 / D
Kuebler Blvd/ I-5 SB Ramp	1.92 / F	1.96 / F	- Re-stripe southbound left/through lane to a left/through/right lane	1.92 / F
Kuebler Blvd/ I-5 NB Ramp	1.29 / F	1.30 / F	- Re-stripe northbound left-turn lane to a left/right lane	1.10 / F
Kuebler Blvd/ 36th Ave	2.28 / F	2.30 / F	- Signal timing adjustments	2.27 / F

TRANSPORTATION PLANNING RULE

This report addresses the Oregon Administrative Rule Section 660-12-0060 of the Oregon *Transportation Planning Rule* (TPR) and the latest amendments to the *1999 Oregon Highway Plan* (OHP) to demonstrate that the proposed zone change is consistent with adopted state policies regarding these types of land use actions. The following section evaluates the consistency of the proposed land use action with the TPR and OHP.

Transportation Plan Rule

OAR Section 660-12-0060 of the Transportation Planning Rule (TPR) sets forth the relative criteria for evaluating plan and land use regulation amendments. Table 11 below summarizes the criteria in Section 660-012-0060.

Table 11
Summary of Criteria in OAR 660-012-0060

Criteria	Description	Applicable?
1	Provides measures for mitigating a significant impact.	See response below
2	Describes how to determine if a proposed land use action results in a significant impact.	See response below
3	Determinations under Criteria #1 and #2 are coordinated with other local agencies.	See response below
4	Indicates that the presence of a transportation facility shall not be the basis for an exception to allow development on rural lands.	No
5	Indicates that local agencies should credit developments that provide a reduction in trips.	No
6	Outlines requirements for a local street plan, access management plan, or future street plan.	No
7	Provides guidelines for multi-purpose, pedestrian-friendly neighborhood	No

(1) Where an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility, the local government shall put in place measures as provided in section (2) of this rule to assure that allowed land uses are consistent with the identified function, capacity, and performance standards (e.g. level of service, volume to capacity ratio, etc.) of the facility. This shall be accomplished by either:

(a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility;

(b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.;

(c) Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes;

(d) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.

Response: Build out of the existing plan and build out of the proposed plan amendment will result in all of the study intersections along Kuebler Boulevard and Battle Creek Road to fall below the minimum acceptable volume-to-capacity standard. Additional transportation improvements have been identified as part of this study to mitigate these operational deficiencies and ensure that the proposed land use does not cause further degradation.

(2) A plan or land use regulation amendment significantly affects a transportation facility if it would:

(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);

Response: The proposed plan amendment will not require or result in any changes to the functional classification of any transportation facility in the vicinity of the site.

(b) Change standards implementing a functional classification system; or

Response: The proposed plan amendment will not require or result in any changes to the standards that implement the functional classification system.

(c) Allows types or levels of land uses which would result in levels of travel or access which are inconsistent with the functional classification of a transportation facility; or

Response: The proposed plan amendment results in future traffic volumes that are consistent with the functional classification of the study roadways.

(d) Reduce the performance of an existing or planned transportation facility below the minimum acceptable performance standard identified in the TSP or comprehensive plan; or

Response: The proposed plan amendment will not reduce the performance standard of the study roadway identified in the TSP, but will add congestion to intersections already at LOS F under existing zoning conditions. To mitigate these intersections, the TPR states in OAR 660-012-0060 Section 3(c) that a local government may approve an amendment that would significantly affect an existing transportation facility, where a development will mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility. Intersection improvements have been identified to return these intersections to acceptable operations under proposed CR zoning 2025 total traffic conditions.

In addition, as part of the Southeast Salem Area Transportation Study (SESATS), improvements are currently being developed to address operation and access issues throughout Southeast Salem, including the I-5/Kuebler interchange. The Kuebler Interchange Area Management Plan (IAMP) will address long-term strategies to improve this interchange and the surrounding local street network.

(e) Worsen the performance of an existing or planned transportation facility that is otherwise projected to perform below the minimum acceptable performance standard identified in the TSP or comprehensive plan.

Response: Buildout of the existing plan and buildout of the proposed plan amendment will result in all of the study intersections along Kuebler Boulevard and Battle Creek Road to fall below the minimum acceptable volume-to-capacity standard and the proposal will add congestion to those intersections. To mitigate these intersections, the TPR states in OAR 660-012-0060 Section 3(c) that a local government may approve an amendment that would significantly affect an existing

transportation facility, where a development will mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility. Intersection improvements have been identified to avoid further degradation (see Table 10) under proposed CR zoning 2025 total traffic conditions.

(3) Determinations under subsections (1) and (2) of this section shall be coordinated with affected transportation facility and service providers and other affected local governments.

Response: The project team is coordinating the assessment of the transportation impact analysis with the City of Salem and ODOT.

Oregon Highway Plan

Under Policy 1F (Highway Mobility Standards), Section 1F.6, of the Oregon Highway Plan, *the evaluation of amendments to transportation system plans, acknowledged comprehensive plans and land use regulations subject to OAR 660-12-060, in situations where the volume-to-capacity ratio for a highway segment, intersection or interchange is above the standards in Table 6 or Table 7 of the Oregon Highway Plan, or those otherwise approved by the Commission, and transportation improvements are not planned within the planning horizon to bring performance to standard, the performance standard is to avoid further degradation. If an amendment to a transportation system plan, acknowledged comprehensive plan or land use regulation increases the volume to capacity ratio further, it will significantly affect the facility.*

Response: The highway mobility standards affect ODOT facilities. The only ODOT facilities are the I-5 ramp terminal intersections. As part of the Southeast Salem Area Transportation Study (SESATS), improvements are currently being developed to address operation and access issues throughout Southeast Salem, including the I-5/Kuebler interchange. The Kuebler Interchange Area Management Plan (IAMP) will address long-term strategies to improve this interchange and the surrounding local street network. The proposal does not further degrade the Kuebler Road/I-5 interchange. As a sensitivity check, the city intersections were also evaluated for their v/c as well as LOS which the city's TSP uses as its performance standards. Intersection improvements have been identified to avoid further degradation of all city intersections affected (see Table 10) under proposed CR zoning 2025 total traffic conditions.

Based on the criteria set forth in Section 660-12-0060 of the Transportation Planning Rule and Actions 1F.2 and 1F.6 of the Oregon Highway Plan, it is concluded that a 23.4-acre rezone of the subject property can be accommodated within the planned and funded transportation system serving the site, and with the mitigations identified in this report. As such, the Goal 12 – Transportation Planning Rule and the 1999 Oregon Highway Plan requirements are satisfied

Section 5

Conclusions and Recommendations

Conclusions and Recommendations

Based on the results of the traffic impact analysis described in this report, the proposed PacTrust Kuebler Project can be developed while maintaining acceptable operations on the adjacent transportation network pending the inclusion of recommendations identified in this study. The primary findings and recommended actions of the study are summarized below.

FINDINGS

Existing Conditions

- Operational analyses were performed at the intersections along Kuebler Boulevard at Commercial Street, Battle Creek Road, 27th Avenue, I-5 Southbound Ramp, I-5 Northbound Ramp, 36th Avenue, and along Boone Road at Battle Creek Road and Cultus Avenue.
- During the weekday p.m. and Saturday midday peak hours, all of the study area intersections currently operate acceptably with the exception of the Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections. The City of Salem has identified widening of Kuebler Boulevard and signalization of the Kuebler Boulevard/27th Avenue intersection as an existing needed improvement.

Year 2007 Background Traffic Conditions (without site development)

- Under forecast year 2007 background traffic conditions (without site development) all study intersections are expected to operate acceptably except the previously identified Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections.
- Roadway improvements would be required to return these intersections to acceptable levels of service under the year 2007 background traffic conditions (without site development). To alleviate congestion along Kuebler Boulevard between I-5 and Battle Creek Road, Kuebler Boulevard requires widening and signalization of the Kuebler Boulevard/27th Avenue intersection, as identified under existing conditions. These improvements are identified as needed improvements in the City of Salem Transportation System Plan (TSP) and by other transportation studies.

City of Salem Improvements – Kuebler Boulevard Improvement Project

- Based on conversations with City staff, the City of Salem has received authorization for federal funds towards improving Kuebler Boulevard from I-5 through Battle Creek Road. These are funded improvements on the City's Capital Improvement Program (CIP). The design phase for the *Kuebler Boulevard Improvement Project* is currently underway and project completion is expected in 2008 according to City staff. This improvement project includes the following:
    - A second westbound travel lane, curb, and sidewalk from the I-5 southbound ramp terminal to approximately 1,600 feet west of Battle Creek Road.
    - Intersection improvements at Kuebler Boulevard/Battle Creek Road to add exclusive right-turn lanes along the northbound, southbound and westbound approaches.
    - A new traffic signal at the Kuebler Boulevard/27th Avenue intersection.

- Traffic signal interconnect along Kuebler Boulevard from the I-5 northbound ramp terminal to Commercial Street.

Zone Change Scenarios and Trip Generation Estimates

- Under the existing CO/RA zoning, the site could generate up to 4,575 net new daily weekday trips on the adjacent street system. Of these trips, approximately 515 net new trips would occur during the weekday p.m. peak hour and 450 net new trips would occur during the Saturday midday peak hour.
- The proposed new CR zoning on the site could add up to 5,085 net new daily trips beyond that which would be predicted for the RA zoning, for a total of 9,660 net new daily weekday trips on the adjacent street system. Of these trips, approximately 900 net new trips would occur during the weekday p.m. peak hour and 1,350 net new trips would occur during the Saturday midday peak hour.

Property Access

- Access to the subject property was assumed via two full site driveways, one onto 27th Avenue and the other onto Boone Road, opposite of Cultus Avenue. This access scenario was evaluated under both existing and the proposed zoning conditions. However, to better service the site and reduce traffic on Boone Road, PacTrust is proposing a third access driveway (right-in only) along Kuebler Boulevard. Both access scenarios were evaluated under year 2007 total traffic conditions.

Existing Zoning 2007 Total Traffic Conditions

- Under forecast year 2007 total traffic conditions (assuming a reasonable worst-case buildout under the existing zoning), the Boone Road/Battle Creek Road and Kuebler Boulevard/I-5 Southbound Ramp intersections are forecast to operate over City and ODOT standards. In addition, the Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections are forecast to continue to operate unacceptably from 2005 existing traffic conditions.
- In addition to the funded City of Salem improvements to Kuebler Boulevard explained above, additional improvements are needed along Kuebler Boulevard and at the Boone Road/Battle Creek Road and Kuebler Boulevard/I-5 southbound ramp intersections to return these intersections to acceptable operations under existing zoning 2007 total traffic conditions.
    - **Kuebler Boulevard** - An additional eastbound through lane is needed along Kuebler Boulevard from west of Battle Creek Road to the I-5 southbound ramp to accommodate forecast traffic volumes.
    - **Boone Road / Battle Creek Road –** A traffic signal is needed at this location to accommodate forecast traffic demands. The critical eastbound minor street movement is forecast to operate at LOS "F" and over capacity during the p.m. peak hour. A signal warrant analysis was conducted to identify the need for a traffic signal under existing zoning build-out conditions. The intersection meets Warrant 2 (four-hour vehicular volume) and Warrant 3 (peak hour volume), however, does not meet Warrant 1 (eight-hour vehicular volume).

- **Kuebler Boulevard / I-5 Southbound Ramp** - This intersection is forecast to operate at a v/c ratio of 0.93 during the weekday p.m. peak hour, exceeding ODOT's minimum v/c ratio of 0.85. The heavy southbound right turn movement from the off-ramp to westbound Kuebler Boulevard requires mitigation in the near-term. Reasonable mitigation that would return the I-5 southbound off-ramp to the minimum 0.85 v/c ratio would be to re-stripe the I-5 southbound off-ramp approach to Kuebler Boulevard from a shared left/through lane to a shared left/through/right lane. ODOT has identified the need for interchange improvements and is currently in the process of securing funding for improvement projects. Although specific improvements have not been finalized, the need for duel southbound right-turn lanes is recommended to accommodate the heavy movement. Assuming the widening of Kuebler Boulevard to two westbound through lanes from the I-5 Southbound Ramp to Battle Creek Road, the addition of a second southbound right-turn lane can be accommodated in by re-striping the southbound shared left/through lane to a shared left/through/right lane.

Proposed Zoning 2007 Total Traffic Conditions

- Under forecast year 2007 total traffic conditions (assuming a reasonable worst-case buildout under the proposed zoning), the Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections are forecast to continue to operate unacceptably from 2005 existing traffic conditions.
- Similar to the existing zoning scenario, the Boone Road/Battle Creek Road and Kuebler Boulevard/I-5 Southbound Ramp intersections are forecast to operate unacceptably.
- The minor street northbound movement at the Boone Road/Cultus Avenue-Site-Driveway intersection is forecast to operate at LOS "F" during the Saturday midday peak hour. Northbound motorists wanting to turn left or go straight will likely experience long delays during peak conditions due to the heavy eastbound movement into the proposed site. However, adequate capacity will be available for both northbound and southbound movements.
- The same roadway improvements identified under *existing zoning 2007 total traffic conditions* would be needed to meet City of Salem and ODOT operating standards under proposed zoning 2007 total traffic conditions.
- A queuing analysis determined that with the same roadway improvements identified under *existing zoning 2007 total traffic conditions* explained above in place, sufficient lane storage will exist at the study intersections in the immediate site vicinity.

Proposed Kuebler Access Driveway

- Pactrust is proposing a right-in only driveway along Kuebler Boulevard to improve vehicular access into the site. Providing limited access off Kuebler Boulevard would provide for a more convenient entrance into the site and would also reduce traffic along Battle Creek Road (south of Kuebler Boulevard) and Boone Road (east of Battle Creek Road).
- All of the study intersections were found to operate acceptably under proposed zoning 2007 mitigated traffic conditions with the proposed right-in access on Kuebler Boulevard during the weekday p.m. and Saturday midday peak hours.
- A comparison of intersection operations at the Boone Road/Cultus Avenue-Site Driveway intersection with and without the proposed right-in only access reveals an improvement to that

intersection. Both level of service and volume-to-capacity ratios for the minor street critical movements are forecast to improve to acceptable levels with the proposed right-in access on Kuebler Boulevard.

Year 2025 Total Traffic Conditions

- Under forecast year 2025 total traffic conditions (with the existing CO/RA zoning scenario), all of the study intersections along Kuebler Boulevard and Battle Creek Road are projected to operate unacceptably under both zoning scenarios during the weekday p.m. peak hour.
- The proposed zone change meets the requirements of the Goal 12 – Transportation Planning Rule and the 1999 Oregon Highway Plan with the mitigation treatments in place along Kuebler Boulevard, Battle Creek Road, Boone Road, and 27th Avenue. These roadway improvements are provided under the *Planning Horizon Year Traffic Conditions* section (see Section 4, Table 10, page 42).

RECOMMENDATIONS

To ensure adequate safety and operation of the surrounding transportation system, the following improvements are recommended under the proposed zone change to meet or exceed the performance standard under build-out conditions and to avoid further degradation of intersection operations and to maintain the levels of service and v/c ratio under the current zoning for city facilities and v/c ratio for ODOT facilities under the planning horizon year conditions.

- Kuebler Boulevard Improvement Project – City of Salem (Funded in the City CIP)
    - A second westbound travel lane, curb, and sidewalk from the I-5 southbound ramp terminal to approximately 1,600 feet west of Battle Creek Road.
    - Intersection improvements at Kuebler Boulevard/Battle Creek Road to add exclusive right-turn lanes along the northbound, southbound and westbound approaches.
    - A new traffic signal at the Kuebler Boulevard/27th Avenue intersection.
    - Traffic signal interconnect along Kuebler Boulevard from the I-5 northbound ramp terminal to Commercial Street.
- Provide an additional travel lane in the eastbound direction along Kuebler Boulevard from west of Battle Creek Road to the I-5 southbound ramp.
- Install a traffic signal at the Battle Creek Road/Boone Road intersections.
- Construct an exclusive northbound right-turn lane and provide overlap phasing for this movement at the Kuebler Boulevard/27th Avenue intersection.
- Re-stripe the I-5 southbound off-ramp approach to Kuebler Boulevard from a shared left/through lane to a shared left/through/right lane.
- Provide a right-in access driveway along Kuebler Boulevard, located approximately near the midpoint of Battle Creek Road and 27th Avenue. The eastbound right-turn lane should be an exclusive lane and designed to City of Salem standards.
- Provide two egress lanes and one ingress lane at the access driveway along Boone Road, located opposite of Cultus Avenue.

- Provide two egress lanes and one ingress lane at the access driveway along 27th Avenue, located approximately 400 feet to the south of Kuebler Boulevard.
- Landscaping along the frontage of the property should be maintained to ensure adequate sight distance at the access driveways.

Section 6

References

References

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MEMORANDUM

Date: November 14, 2006 **Project #**: 7460.02

To: Eric Destival, City of Salem
Steve Wilson, ODOT

From: Anthony Yi, P.E. & Dave Daly

Cc: Kevin Hottman, City of Salem
Dan Fricke, ODOT
Dick Loffelmacher, PacTrust
Eric Sporre, PacTrust
Jeff Tross
Wendie Kellington
Mark Vandehey, Kittelson & Associates, Inc.

Project: PacTrust Kuebler Project

Subject: Supplemental to the September 2006 PacTrust Kuebler Project TIA

We prepared this supplemental memorandum to provide an update to the September 2006 *PacTrust Kuebler Project Transportation Impact Analysis*. This memorandum addresses the transportation impacts of the project site as they relate to the recent change in the proposed access scenario that relocates the proposed Boone Road driveway from Cultus Avenue to a location west of Cultus Avenue. This supplemental analysis was completed at the request of PacTrust and City staff. This memorandum also addresses the policy guidance regarding access on Kuebler Boulevard, and also responds to comments prepared by DKS Associates and Sherman, Sherman, Johnnie & Hoyt, LLP regarding the September 2006 TIA.

Background

In September 2006, Kittelson & Associates, Inc. prepared a transportation impact analysis (TIA) for the proposed PacTrust Kuebler project. As stated in the September 2006 TIA, PacTrust is proposing a multi-purpose commercial development on approximately 28.4 acres of vacant land located on the south side of Kuebler Boulevard between Battle Creek Road and 27th Avenue in Salem, Oregon. The land is currently zoned as a combination of Commercial Office (CO) and Residential Agriculture (RA). For purposes of the September 2006 TIA, the zoning designation for the 28.4-acre subject property was assumed in whole to be changed from CO/RA to CO/CR, however, the current plan and zone change application applies only to 18.4 acres. The September

2006 TIA assumes a zone change of 23.4 acres of RA to be changed to CR. Therefore, the September 2006 TIA overstates trips and impacts to the extent of the 10 acres. Further, the September 2006 TIA assumed as existing trips those trips associated with the existing commercial and residential zoning for the entire 28.4 acres and then also assumed as new trips the existing commercial zoning plus the trips associated with the new zoning. Therefore, the proposed zoning scenario overstates trips in this regard as well because it counts existing CO trips as if they are new trips in the analysis.

A reasonable "worst-case" development scenario was assumed in the estimate of the potential traffic impact the development would have on the surrounding transportation system. This "worst-case" estimate consisted of 290,000 square feet of shopping center space and 24,000 square feet of medical office space. Full build-out of the site was assumed to occur in 2007.

The September 2006 TIA evaluated two access scenarios to the site. The first scenario proposed two full access points to the site: one onto 27th Avenue and a second onto Boone Road opposite Cultus Avenue. The second access scenario assumed right-in access from Kuebler Boulevard in addition to the proposed driveways on 27th Avenue and Boone Road.

The September 2006 TIA recommended several improvements to ensure adequate safety and operation of the surrounding transportation system under the proposed zone change. The intent of these improvements is to meet or exceed the performance standard under build conditions and to avoid further degradation of intersection operations, to maintain the levels of service and v/c ratio under the current zoning for city facilities, and to maintain the v/c ratio for ODOT facilities under the planning horizon year conditions. The recommended improvements are summarized below.

- Kuebler Boulevard Improvement Project – City of Salem (Funded in the City CIP)
  - Add a second westbound travel lane, curb, and sidewalk from the I-5 southbound ramp terminal to approximately 1,600 feet west of Battle Creek Road.
  - Add exclusive right-turn lanes along the northbound, southbound, and westbound approaches at the Kuebler Boulevard/Battle Creek Road intersection.
  - Install a new traffic signal at the Kuebler Boulevard/27th Avenue intersection.
  - Add a traffic signal interconnect along Kuebler Boulevard from the I-5 northbound ramp terminal to Commercial Street.
- Provide an additional travel lane in the eastbound direction along Kuebler Boulevard from west of Battle Creek Road to the I-5 southbound ramp.
- Install a traffic signal at the Battle Creek Road/Boone Road intersection.
- Construct an exclusive northbound right-turn lane and provide overlap phasing for this movement at the Kuebler Boulevard/27th Avenue intersection.
- Re-stripe the I-5 southbound off-ramp approach to Kuebler Boulevard from a shared left/through lane to a shared left/through/right lane.
- Provide a right-in access driveway along Kuebler Boulevard, located near the midpoint of Battle Creek Road and 27th Avenue. The eastbound right-turn lane should be an exclusive lane and designed to City of Salem standards.

- Provide two egress lanes and one ingress lane at the access driveway along Boone Road, opposite of Cultus Avenue.
- Provide two egress lanes and one ingress lane at the access driveway along 27th Avenue, approximately 400 feet to the south of Kuebler Boulevard.
- Maintain landscaping along the frontage of the property to ensure adequate sight distance at the access driveways.

Figures 1, 1A, 1B and 1C show a preliminary functional design layout of the recommended improvements along Kuebler Boulevard, Battle Creek Road, Boone Road, and 27th Street. As part of this layout, City staff also requested that exclusive left-turn lanes be added along Boone Road at the Battle Creek Road intersection to further improve intersection operations.

As such, a supplemental analysis was completed to evaluate the proposed site driveways and adjacent street intersections with the recommended roadway improvements shown in the previous figures in place, including the relocation of the proposed Boone Road driveway from Cultus Avenue to a location west of Cultus Avenue.

Year 2007 Total Traffic Conditions (without Proposed Kuebler Access)

This supplemental analysis addresses the transportation impacts of the project site as they relate to the recent change in the proposed access scenario that relocates the proposed Boone Road driveway from Cultus Avenue to a location west of Cultus Avenue. Figure 2 provides a summary of the forecast total traffic operations associated with full build-out of the site under the proposed CO/CR zoning scenario and without the proposed right-in only driveway on Kuebler Boulevard. As indicated in the respective figure, the Boone Road/Cultus Avenue intersection and all other study intersections are forecast to operate acceptably under year 2007 total traffic conditions, after the recommended roadway improvements shown in the previous figures are constructed. *Appendix "A" contains the 2007 total traffic operations worksheets.*

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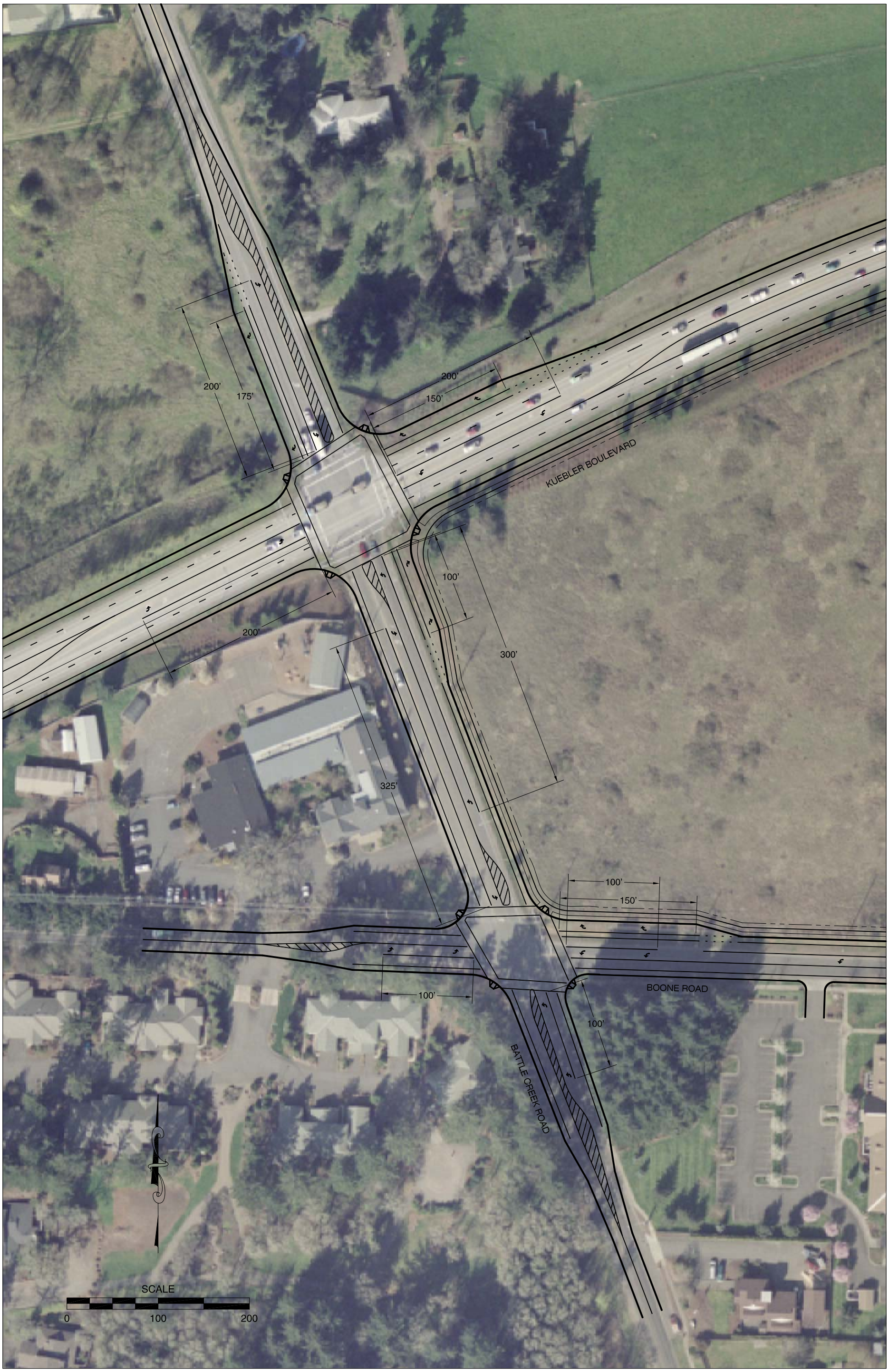
PACTRUST KUEBLER PROJECT DESIGN CONCEPT
SALEM, OREGON

FIGURE 1

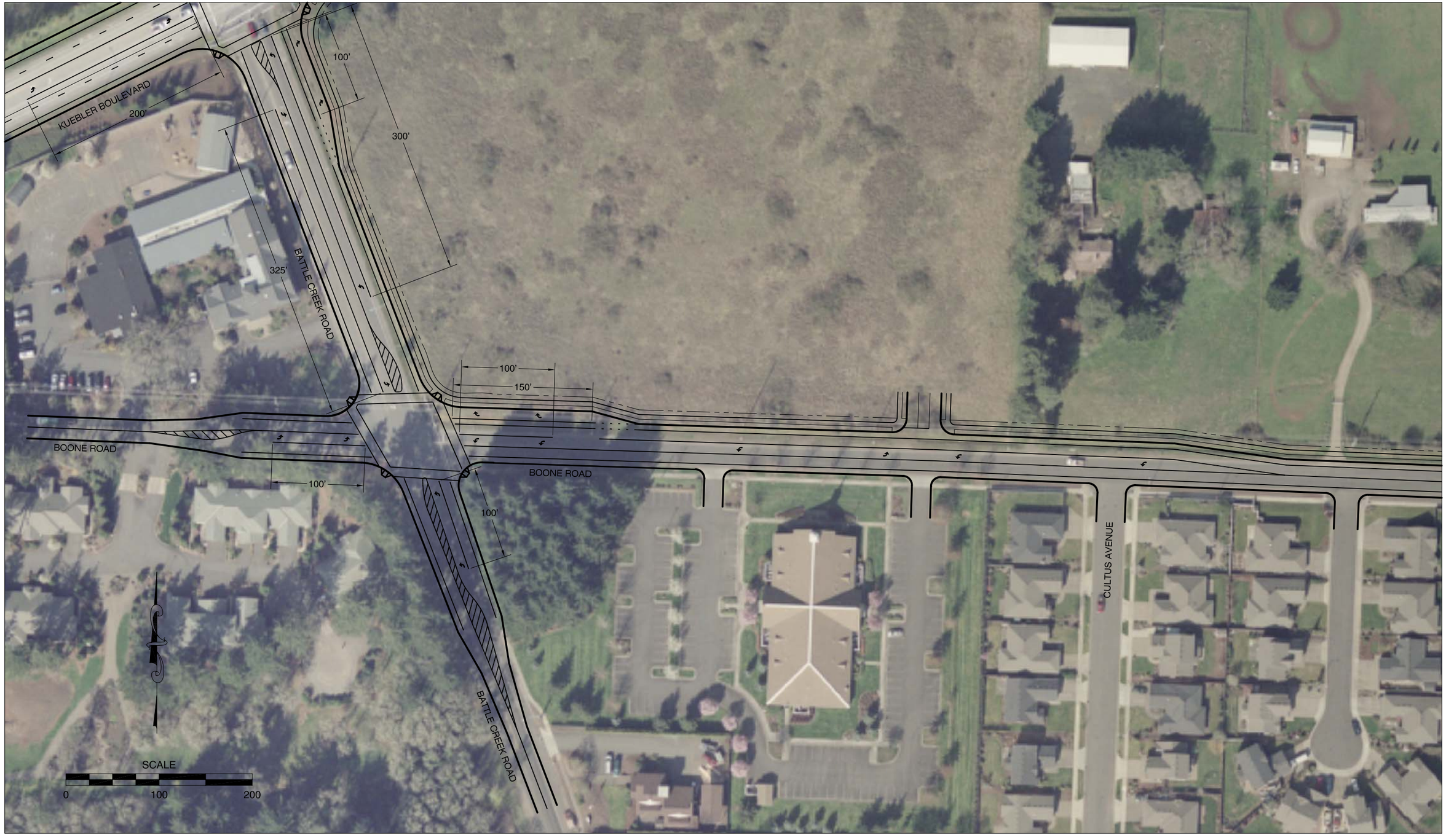


KUEBLER BLVD/BATTLE CREEK RD INTERSECTION CONCEPT
SALEM, OREGON

FIGURE **1A**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

H:\projfile\7460 - Kuebler Retail Center\dwgs\design\Supplemental Nov 2006\Kuebler Design Concept 3.dwg Nov 13, 2006 - 9:40pm - ddaly Layout Tab: FIG 01A



BOONE RD/BATTLECREEK RD INTERSECTION CONCEPT
SALEM, OREGON

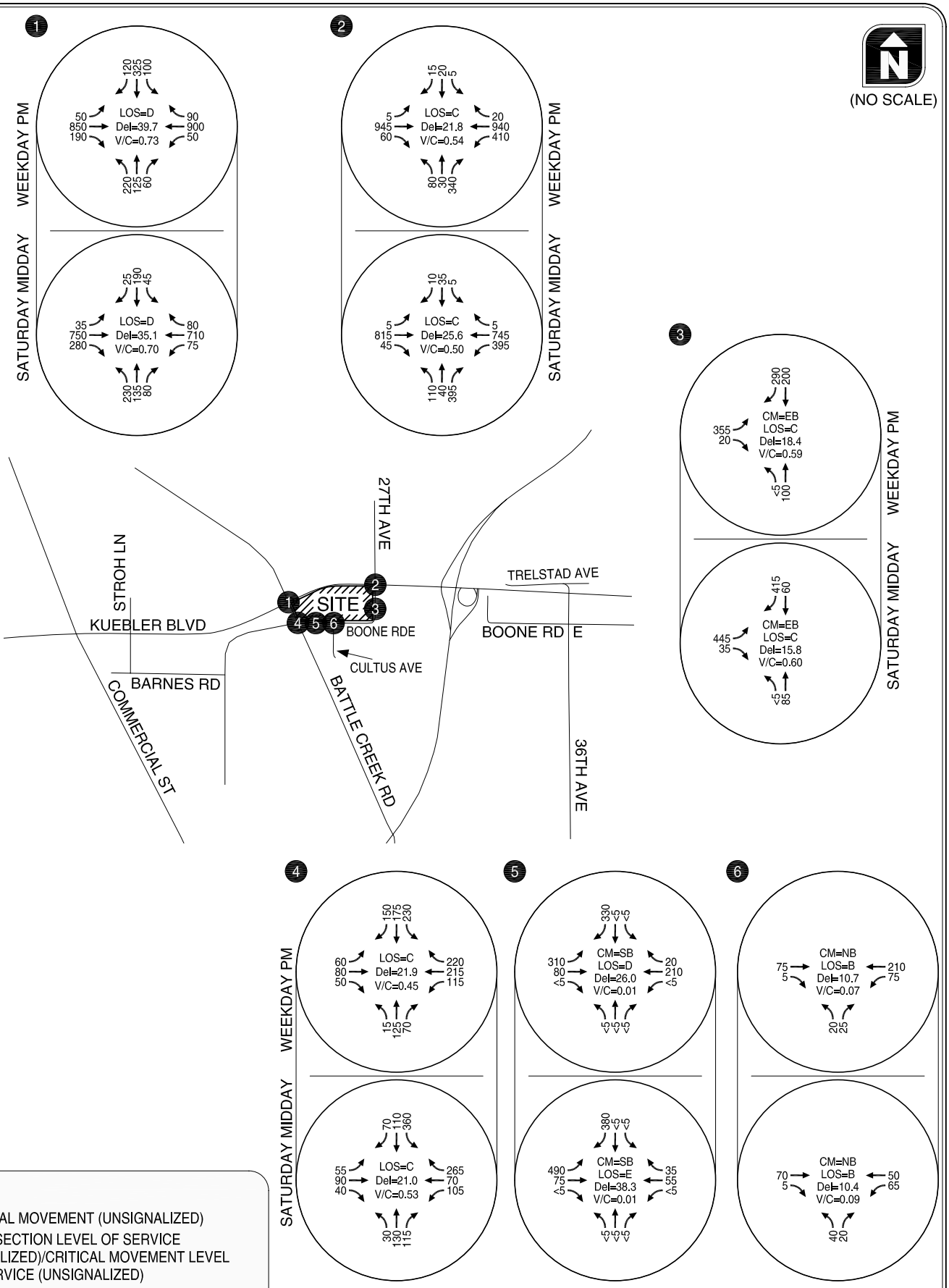
FIGURE **1B**

Kittelson & Associates, Inc.
Transportation Engineering / Planning

H:\profile\7460 - Kuebler Retail Center\dwgs\design\Supplemental Nov 2006\Kuebler Design Concept 3.dwg Nov 13, 2006 - 9:42pm - ddaly Layout Tab: FIG 01C

KUEBLER BLVD/27TH AVE INTERSECTION CONCEPT
SALEM, OREGON

FIGURE **1C**



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

Note: Volumes shown have been rounded to the nearest five vehicles.

PROPOSED ZONING 2007 TOTAL TRAFFIC CONDITIONS
CHURCH ACCESS SCENARIO
SALEM, OREGON

FIGURE 2

Queuing Analysis

A 95th percentile queuing analysis, based on SimTraffic, was performed at the site-access driveways and adjacent intersections to ensure that adequate vehicle storage will be available when the site is fully built. Table 1 summarizes the results of the queuing analyses for the proposed zoning under full site build-out traffic conditions.

Table 1
Estimated 95th Percentile Queue Lengths

Intersection	Movement	Weekday PM Peak Hour (ft)	Saturday Midday Peak Hour (ft)	Available Storage (ft)	Adequate Storage Available?
Kuebler Boulevard/ Battle Creek Road	EB LT	150	105	200	Yes
	WBLT	140	160	200	Yes
	WBRT	130	75	150	Yes
	NBLT	285	295	300	Yes
	NBTH	180	200	350	Yes
	NBRT	55	65	100	Yes
	SBLT	180	110	200	Yes
	SBTH	645	260	700+	Yes
	SBRT	175	90	175	Yes
Boone Road/ Battle Creek Road	EBLT	75	60	100	Yes
	WBLT	90	100	100	Yes
	WBTH	145	65	200+	Yes
	WBRT	70	60	150	Yes
	NBLT	35	65	100	Yes
	SBLT	200	325	325	Yes
	SBTHRT	175	140	350	Yes
Kuebler Boulevard/ 27th Avenue	EBLT	35	35	200	Yes
	WBLT	240	280	300	Yes
	NBLT	125	175	200	Yes
	NBTH	130	105	225	Yes
	NBRT	210	205	225	Yes
	SBLT	25	25	100	Yes
27th Avenue/ Site Driveway	SBRT	35	45	100	Yes
Boone Road/ Site Driveway	EB LT	100	110	200+	Yes

As shown in Table 1, the queuing analyses determined that sufficient lane storage will exist at the study intersections, as well as the proposed site-access driveways to Kuebler Boulevard, 27th Avenue, and Boone Road, with proposed off-site transportation improvements in place and without the proposed right-in only driveway on Kuebler Boulevard. *Appendix "B" contains the queuing analysis summary worksheets.*

Proposed Kuebler Right-In Driveway

Although the proposed right-in only driveway along Kuebler Boulevard is not needed as part of this zone change application to achieve acceptable intersection operations and queuing under build-out conditions, PacTrust is proposing a right-in only driveway along Kuebler Boulevard to improve vehicular access into the site. Providing limited access off Kuebler Boulevard would provide a more convenient entrance into the site and would reduce traffic along Battle Creek Road (south of Kuebler Boulevard) and Boone Road (east of Battle Creek Road).

Response to Public Comments

This memorandum also responds to comments prepared by DKS Associates (Appendix "C") and Sherman, Sherman, Johnnie & Hoyt, LLP (Appendix "D") regarding the September 2006 TIA. The remainder of this memorandum summarizes the comments in *italics* and provides our response in standard text.

Traffic Counts (DKS Associates, page 1) (Sherman, Sherman, Johnnie & Hoyt, LLP, pages 1-5) *– The traffic counts used in the September 2006 TIA are over 12 months old, fail to meet the ODOT requirements for best practices, were collected in the summer when traffic volumes are typically lower, and were taken at a time of year when schools are not in sessions.*

Response #1: The traffic volumes used in the September 2006 TIA were determined using accepted engineering principles for collecting and analyzing this data. Evidence that the counts were properly collected and analyzed is that the traffic counts were accepted and approved by both City of Salem and ODOT staff. The dates on which the manual turning movement counts were collected (summer of July 2005) are consistent with accepted engineering principles and the requirements of the ODOT Analysis Procedures Manual (APM) dated April 2006 (page 3-8). Also, as stated in the APM:

> For most projects, the 30HV should be used to represent design volumes. In fully developed portions of Metropolitan Planning Organization (MPO) areas, the 30th highest hour is generally assumed to be represented by the weekday peak hour. Where 30HV will be used in analysis, the counts should be taken as close to the 30th highest hour as possible. This typically requires collecting counts on a weekday afternoon (usually in summer) in most larger urban areas, but may include weekends for high recreation areas (the coast), or areas experiencing lunch hour peaks or high reverse direction flows during the day. (APM, page 3-4)

Volumes in the September 2006 TIA were collected and evaluated as explained above and the design volumes used were based on the 30HV. Furthermore, the APM recommends that seasonal factors be applied to manual traffic counts to obtain 30th highest hour volumes (30HV) and that one approach is to use seasonal factors developed from local automatic traffic recorders (ATRs) to convert manual traffic counts to 30HV (APM, page 2-7). The closest ATRs are located along ORE 22 (Willamina-Salem Highway 30, recorder 24-004 and 24-014) on both sides of I-5. A review of available data provided by the ODOT Traffic Counting Program reveals that July represents peak seasonal traffic conditions based on average daily traffic collected in 2005.

Also, although many schools are not in session during the summer months, the traffic analysis analyzed peak time periods when schools are not typically in operation or their traffic flows are not at their peaks (weekday p.m. peak hour and Saturday midday peak hour).

Kuebler Boulevard/I-5 Southbound Ramp Operations (DKS Associates, page 2) *– Using the September 2005 traffic count that was 14% higher, the Kuebler Boulevard/I-5 Southbound Ramp was reanalyzed and was found to operate at level of service "E".*

Response #2: Although increasing traffic volumes at the Kuebler Boulevard/I-5 Southbound Ramp intersection by 14 percent may result in LOS "E" operations, the results provided in the September 2006 TIA at the Kuebler Boulevard/I-5 Southbound Ramp intersection (September 2006 TIA, page 15) are reflective of the traffic counts used in the analysis. As previously stated in Response #1, the traffic volumes used in the September 2006 TIA were appropriate, consistent with sound engineering practice as well as applicable standards. Evidence of this is that the traffic volumes used in the analysis were accepted and approved by both City of Salem and ODOT staff.

In addition, baseline traffic volumes for the 2005 existing p.m. peak hour, 2007 background p.m. peak hour, and 2025 background p.m. peak hour conditions were provided to City of Salem and ODOT staff for review and confirmation via e-mail. Based on an e-mail response from the City of Salem, dated August 9, 2006, both the City and DKS Associates confirmed the use of the refined traffic forecasts as appropriate. Appendix "E" contains the e-mail correspondences.

Trip Generation (DKS Associates, page 2) *– The trip generation for the medical office use with existing zoning appears to be overestimated as compared to the future zoning… the assumptions about the employment density are skewed to lessen the increment of new trips from the rezone action.*

Response #3: As stated in the September 2006 TIA, the current plan and zone change application applies to 18.4 acres; however, the September 2006 TIA assumes a zone change of 23.4 acres of RA to be changed to CR. As such, the estimated trip generation for the proposed zoning scenario analyzed in the September 2006 TIA is conservative and thus creates a larger increment of new trips from the rezone action.

Also, Table 2 provides a comparison of vehicle trips per acre for the medical-dental office use for the existing and proposed zoning scenarios, based on the estimated trip generation used in the September 2006 TIA.

Table 2
Comparison of Estimated Trip Generation used for Medical-Dental Office Use

Zoning Scenario	Acreage	Weekday PM Peak Hour Trips		Saturday Midday Peak Hour Trips	
		Total Trips	Trips per Acre	Total Trips	Trips per Acre
Existing Zoning	10.0	325	33	270	27
Proposed Zoning	2.2	90	41	85	39

As shown in Table 2, the estimated trip generation used under the proposed zoning scenario results in a higher trip density as compared to the existing zoning.

Furthermore, the City of Salem's Revised Code related to zoning was used for developing a reasonable worst-case development scenario under the existing zoning. In order to maintain consistency with the planning efforts associated with the Kuebler Interchange Area Management Plan (IAMP) and the Southeast Salem Area Transportation Study (SESATS), the same employment and residential densities used in the May 2005 *Draft Kuebler Interchange Access Management Plan Operational and Safety Analyses* were used in the analysis. As summarized in the September 2006 TIA, the trip generation under the existing zoning for the medical-dental office use was based on 10 acres of commercial land as designated by the Salem Comprehensive Plan and an average employment density of 31 jobs per acre based on the May 2005 *Draft Kuebler Interchange Access Management Plan Operational and Safety Analyses*.

The proposed zoning scenario was developed based on the CR zone requirements included in the City of Salem Development Code. The scenario assumed 24,000 square-feet of medical-dental office space as proposed by PacTrust.

The trip generation estimates for the medical-dental office use under both zoning scenarios (existing and proposed) were derived from empirical observations taken at other similar developments. These observations are summarized in the standard reference manual, *Trip Generation, 7th Edition,* published by the Institute of Transportation Engineers (ITE). The trip generation manual provides two separate independent variables to calculate vehicle trip ends: employees and building square-feet. Under the existing zoning scenario, the trip generation estimates used in the September 2006 TIA assumed employees as the independent variable because an employment density was used in the May 2005 *Draft Kuebler Interchange Access Management Plan Operational and Safety Analyses.* Similarly, because the proposed development plan assumes 24,000 square feet of medical-dental office space, building square-footage was used as the independent variable. This trip generation approach is consistent with the variables assumed under both zoning scenarios and with accepted principles of traffic engineering. This approach also results in very similar trip generation numbers as compared to using either the number of employees or the amount of building square-footage as the independent variable for medical-dental office use when estimating vehicle trips for both zoning scenarios. *Appendix "F" provides a breakdown of the estimated trip generation for both trip generation scenarios.*

Proposed Access to Kuebler Boulevard (DKS Associates, pages 2-3) (Sherman, Sherman, Johnnie & Hoyt, LLP, pages 3-5) *– The proposed development plan calls for access on Kuebler Boulevard, classified as a Parkway, and the proposed accesses to the site will not function at acceptable levels unless a driveway onto Kuebler Boulevard is provided.*

Response #4: Although the City of Salem Transportation System Plan provides basic design guidelines for street classifications, including parkways, no standards prohibit access on a Parkway. Furthermore, although not a standard but rather a policy referent, the City of Salem *Development Bulletin #34 – Design Standards for Access Management on Collectors, Arterials, and Parkways* (Appendix "G") states that permitted access uses to a Parkway include public or private developments generating traffic volumes of 10,000 or more vehicles per day. The estimated trip generation of 14,270 daily trips under the proposed zoning scenario exceeds the 10,000 vehicles per day threshold referenced in the policy document and therefore justifying an access.

As previously identified in this supplemental memorandum and as indicated in Figure 2, all study intersections are forecast to operate acceptably under year 2007 total traffic conditions with build-out of the site under the proposed CO/CR zoning scenario, assuming build-out of the recommended roadway improvements shown in figures 1 through 1C. **This is without the proposed right-in only driveway on Kuebler Boulevard**.

However, as previously identified in the September 2006 TIA, PacTrust is proposing a right-in only driveway along Kuebler Boulevard to improve vehicular access into the site. Providing limited access off Kuebler Boulevard would provide a more convenient entrance into the site and would reduce traffic along Battle Creek Road (south of Kuebler Boulevard) and Boone Road (east of Battle Creek Road).

Queuing Analysis (DKS Associates, page 3) *– The PacTrust study provides queuing analysis for the 2007 Saturday mid-day and weekday PM peak hours but does not provide queuing analysis for the future 2025 scenario.*

Response #5: As previously identified in this supplemental memorandum and as indicated in Figures 1 through 1C, a design concept was developed that can accommodate vehicle queues under build-out conditions, while maintaining acceptable intersection operations under proposed zoning year 2007 total traffic conditions and avoids further degradation of all study intersections under year 2025 traffic conditions. This is without the proposed right-in only driveway on Kuebler Boulevard. These improvements proposed by the Applicant will help alleviate congestion in the study area for year 2007 total traffic to a level that is a net improvement in operations relative to the existing zoning.

As identified in the September 2006 TIA, regardless of a change in zoning of the subject property, all of the signalized study intersections along Kuebler Boulevard and the Battle Creek Road/Boone Road intersection are forecast to operate at LOS "F" and well over capacity during the weekday p.m. and Saturday midday peak hours. Under conditions where severe traffic congestion is forecast, such as in the existing and proposed zoning conditions, vehicle queues are difficult to accurately predict due to intersection cycle failures, and as such the future year 2025 traffic operations focused on overall intersection operations and mitigations to avoid further degradation.

Battle Creek Road Operations (DKS Associates, pages 3-4) *– The applicant's traffic study recommends a new traffic signal at the Battle Creek Road/Boone Road intersection. This proposed traffic signal would be located approximately 500 feet south of the existing traffic signal at the Kuebler Boulevard/Battle Creek Road intersection. Having closely spaced traffic signals may make it difficult to coordinate and provide adequate vehicle storage based on the estimated traffic volumes.*

Response #6: As previously identified in this supplemental memorandum and as indicated in Figures 1 through 1C, a design concept was developed that can accommodate vehicle queues under build-out conditions, while maintaining acceptable intersection operations under year 2007 total traffic conditions with the proposed CO/CR zoning scenario and avoids further degradation of both intersections on Battle Creek Road at Kuebler Boulevard and Boone Road under year 2025 traffic conditions. **This is without the proposed right-in only driveway on Kuebler Boulevard**.

Neighborhood Impacts (DKS Associates, page 4) *– The PacTrust traffic analysis showed that Kuebler Boulevard will be significantly over capacity by the year 2025. When major facilities such as Kuebler Boulevard approach capacity, traffic is encouraged to divert to alternative roadways in search of a perceived savings in travel time. Roadway such as Stroh Lane, Boone Road and Barnes Road would likely see an increase in diverted traffic. Livability impacts should be addressed by the applicant as to how the proposed zone change would increase traffic volumes in surrounding neighborhoods.*

Response #7: The proposed zone change includes mitigation that meets operating standards in the build out year 2007 and avoids further degradation of the system in the plan year 2025. As identified in the September 2006 TIA, regardless of a change in zoning of the subject property, all of the signalized study intersections along Kuebler Boulevard and the Battle Creek Road/Boone Road intersection are forecast to operate over capacity during the weekday p.m. and Saturday midday peak hours. The proposed zone change does not affect this forecast and does not further degrade the system.

However, as previously addressed in this memorandum, in addition to the planned and funded City improvements along Kuebler Boulevard, the Applicant is proposing roadway improvements to help alleviate congestion within the study area (see Figures 1 through 1C). Also, as previously identified in the September 2006 TIA, PacTrust is proposing a right-in only driveway along Kuebler Boulevard to improve vehicular access into the site. Providing limited access off Kuebler Boulevard would provide for a more convenient entrance into the site and would also reduce traffic along Battle Creek Road (south of Kuebler Boulevard) and Boone Road (east of Battle Creek Road).

In addition, the Applicant is willing to commit funds toward the City of Salem Neighborhood Traffic Management Program for neighborhood traffic calming devices should any traffic calming measures be needed in any of the surrounding neighborhoods.

Conclusion

Based on the results of this supplemental traffic analysis, the proposed PacTrust Kuebler project can be developed while maintaining acceptable operations on the adjacent transportation network under build-out conditions and avoid further degradation to the performance of the facility under long-term conditions pending the inclusion of recommendations identified in this supplemental memorandum and the September 2006 TIA.

We trust this memorandum provides adequate documentation to serve as an update to the September 2006 TIA. If you have any further questions, please call us at (503) 228-5230.

Attachments

Appendix A: 2007 Total Traffic Conditions Operations Worksheets
Appendix B: Queuing Analysis Worksheets
Appendix C: DKS Associates Comments
Appendix D: Sherman, Sherman, Johnnie & Hoyt, LLP Comments
Appendix E: Baseline Traffic Volume Confirmation E-mail
Appendix F: Estimated Trip Generation
Appendix G: City of Salem Development Bulletin #34

Appendix B

Queuing Analysis
Worksheets

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	324	326	259	272	149	104	115	286	225	29	53
Average Queue (ft)	6	140	128	172	156	49	47	71	55	135	12	18
95th Queue (ft)	23	336	309	263	273	124	107	97	214	232	32	50
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		3								2		
Queuing Penalty (veh)		0								2		

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	455	404	225	218	125	166	137	287	224	30	72
Average Queue (ft)	3	134	154	154	112	44	54	63	39	119	1	24
95th Queue (ft)	16	336	366	213	188	112	124	111	138	199	12	57
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		3								1		
Queuing Penalty (veh)		0								2		

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	455	404	259	272	149	166	137	287	225	30	72
Average Queue (ft)	3	135	148	158	123	45	52	65	43	123	4	23
95th Queue (ft)	18	336	353	228	216	115	121	109	160	208	19	55
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		3								2		
Queuing Penalty (veh)		0								2		

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	225	402	344	226	586	455	25	323	384	48	176	679
Average Queue (ft)	61	292	300	60	418	294	22	227	104	20	113	381
95th Queue (ft)	176	388	359	177	645	463	27	362	304	53	215	686
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)									0			2
Queuing Penalty (veh)									0			0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		16			35	13		4			10	48
Queuing Penalty (veh)		8			18	12		8			46	110

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	108
95th Queue (ft)	213
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	225	601	512	226	588	584	251	325	158	73	176	679
Average Queue (ft)	55	320	319	53	311	229	41	194	71	34	114	446
95th Queue (ft)	133	512	476	126	476	403	150	268	137	65	206	792
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												11
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		21			23	6	0	1			7	50
Queuing Penalty (veh)		10			11	5	0	1			31	108

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	56
95th Queue (ft)	155
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	225	601	512	226	588	584	251	325	384	73	176	679
Average Queue (ft)	56	313	314	55	337	245	36	202	79	30	114	431
95th Queue (ft)	144	488	455	140	534	424	132	297	195	63	208	770
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)									0			9
Queuing Penalty (veh)									0			0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		20			26	8	0	2			8	49
Queuing Penalty (veh)		10			13	7	0	3			35	108

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	69
95th Queue (ft)	175
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	226	1524	1530	178	226	267	267	151	275	1282	1282	284
Average Queue (ft)	91	1366	1221	69	191	229	224	94	257	1162	1090	80
95th Queue (ft)	234	1829	1781	189	256	318	322	193	272	1512	1493	226
Link Distance (ft)		1496	1496							1248	1248	
Upstream Blk Time (%)		55	16							45	13	
Queuing Penalty (veh)		0	0							0	0	
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)	0	81	20	0	12	14	27	0	91	6	11	0
Queuing Penalty (veh)	0	85	42	1	41	39	86	0	366	11	29	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	166	818	800
Average Queue (ft)	164	800	797
95th Queue (ft)	172	806	809
Link Distance (ft)		784	784
Upstream Blk Time (%)		62	52
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	78	25	
Queuing Penalty (veh)	414	54	

Intersection: 7: Boone Road & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	62	92	108	160	31	43	148	243	327
Average Queue (ft)	34	43	57	95	22	10	68	154	157
95th Queue (ft)	59	86	108	152	38	35	136	249	296
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		0					2		
Queuing Penalty (veh)		0					0		

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	82	132	106	163	111	64	132	237	199
Average Queue (ft)	31	37	49	89	38	10	70	114	63
95th Queue (ft)	68	87	87	149	89	34	122	205	142
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	0					2		
Queuing Penalty (veh)	0	0					0		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	82	132	108	163	111	64	148	243	327
Average Queue (ft)	31	38	51	91	34	10	70	124	86
95th Queue (ft)	66	87	93	150	81	34	126	220	203
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	0					2		
Queuing Penalty (veh)	0	0					0		

Intersection: 8: Boone Road & Church Dwy Access, Interval #1

Movement	EB	SB
Directions Served	L	R
Maximum Queue (ft)	120	116
Average Queue (ft)	65	80
95th Queue (ft)	114	111
Link Distance (ft)		223
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Boone Road & Church Dwy Access, Interval #2

Movement	EB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	175	28	162
Average Queue (ft)	53	1	80
95th Queue (ft)	130	11	133
Link Distance (ft)		223	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Road & Church Dwy Access, All Intervals

Movement	EB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	175	28	162
Average Queue (ft)	56	1	80
95th Queue (ft)	128	9	128
Link Distance (ft)		223	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement	B31	B22
Directions Served	T	T
Maximum Queue (ft)	595	653
Average Queue (ft)	85	93
95th Queue (ft)	429	470
Link Distance (ft)	504	1514
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B31	B22
Directions Served	T	T
Maximum Queue (ft)	646	626
Average Queue (ft)	58	28
95th Queue (ft)	359	244
Link Distance (ft)	504	1514
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	4	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B31	B22
Directions Served	T	T
Maximum Queue (ft)	646	653
Average Queue (ft)	64	44
95th Queue (ft)	377	312
Link Distance (ft)	504	1514
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	3	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	92	24	32	98
Average Queue (ft)	65	13	5	17
95th Queue (ft)	105	31	23	73
Link Distance (ft)	361	361	426	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 33: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	157	25	25	31
Average Queue (ft)	82	9	1	4
95th Queue (ft)	131	28	10	20
Link Distance (ft)	361	361	426	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 33: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	157	25	32	98
Average Queue (ft)	78	10	2	7
95th Queue (ft)	126	29	14	39
Link Distance (ft)	361	361	426	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 36: Boone Road & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	56
Average Queue (ft)	9	25
95th Queue (ft)	31	55
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Road & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	6	24
95th Queue (ft)	26	45
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Road & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	56
Average Queue (ft)	6	24
95th Queue (ft)	27	47
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 1545
Network wide Queuing Penalty, Interval #2: 1363
Network wide Queuing Penalty, All Intervals: 1408

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	T	TR	L	L	T	TR	L	T	R	TR
Maximum Queue (ft)	587	647	226	240	81	80	97	92	225	45
Average Queue (ft)	332	342	163	130	29	44	66	53	138	24
95th Queue (ft)	640	685	257	256	73	75	108	91	227	50
Link Distance (ft)	962	962			889	889		354		627
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			400	400			225		200	
Storage Blk Time (%)	11								1	
Queuing Penalty (veh)	1								1	

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	696	706	240	228	165	165	242	268	225	30	74
Average Queue (ft)	1	315	314	163	128	62	71	91	41	149	5	25
95th Queue (ft)	11	636	673	234	216	137	156	174	139	237	25	61
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		14						1		3		
Queuing Penalty (veh)		1						2		4		

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	696	706	240	240	165	165	242	268	225	30	74
Average Queue (ft)	1	319	321	163	129	54	65	85	44	146	4	25
95th Queue (ft)	9	637	677	240	227	126	142	162	132	235	21	58
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		13						0		3		
Queuing Penalty (veh)		1						2		3		

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	448	404	99	586	465	241	325	418	28	176	339
Average Queue (ft)	98	309	302	65	414	358	51	245	176	12	76	262
95th Queue (ft)	233	448	448	103	552	442	180	373	429	34	147	337
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)									2			
Queuing Penalty (veh)									7			
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		25			42	22	0	10				38
Queuing Penalty (veh)		13			22	20	0	18				87

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	62
95th Queue (ft)	153
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	223	368	388	225	436	367	251	327	156	50	150	508
Average Queue (ft)	48	236	236	69	315	231	44	188	73	28	67	258
95th Queue (ft)	117	337	351	163	431	351	151	297	140	55	134	474
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		11			28	7	0	0			2	28
Queuing Penalty (veh)		5			14	6	0	1			7	60

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	78
95th Queue (ft)	179
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	448	404	225	586	465	251	327	418	50	176	508
Average Queue (ft)	60	254	252	68	339	261	46	202	98	24	69	259
95th Queue (ft)	156	377	384	152	479	405	158	322	253	52	137	451
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									2			
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		14			31	10	0	3			1	30
Queuing Penalty (veh)		7			16	10	0	5			5	67

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	74
95th Queue (ft)	174
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	226	1511	1511	151	225	267	267	165	275	1282	1278	266
Average Queue (ft)	118	1437	1312	28	186	225	222	91	257	1179	1085	103
95th Queue (ft)	276	1723	1665	110	255	314	330	180	267	1474	1443	267
Link Distance (ft)		1496	1496							1248	1248	
Upstream Blk Time (%)		62	12							48	3	
Queuing Penalty (veh)		0	0							0	0	
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)	0	82	18	0	12	11	21	2	92	5	8	0
Queuing Penalty (veh)	0	86	38	0	41	30	65	6	368	9	22	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	166	799	818
Average Queue (ft)	164	799	800
95th Queue (ft)	169	801	809
Link Distance (ft)		784	784
Upstream Blk Time (%)		60	54
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	73	19	
Queuing Penalty (veh)	390	42	

Intersection: 7: Boone Road & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	62	97	84	146	70	41	109	235	202
Average Queue (ft)	38	53	48	74	43	14	66	134	82
95th Queue (ft)	75	111	83	121	77	27	117	217	164
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		3					4		
Queuing Penalty (veh)		2					1		

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	99	96	86	164	70	62	157	196	182
Average Queue (ft)	27	36	46	86	24	17	63	100	82
95th Queue (ft)	62	87	81	156	57	44	107	189	152
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	0					1		
Queuing Penalty (veh)	0	0					0		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	99	97	86	164	70	62	157	235	202
Average Queue (ft)	29	40	46	83	29	17	64	108	82
95th Queue (ft)	66	95	81	149	65	40	110	199	155
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	1					1		
Queuing Penalty (veh)	0	1					0		

Intersection: 8: Boone Road & Church Dwy Access, Interval #1

Movement	EB	SB
Directions Served	L	R
Maximum Queue (ft)	88	101
Average Queue (ft)	58	83
95th Queue (ft)	82	108
Link Distance (ft)		223
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Boone Road & Church Dwy Access, Interval #2

Movement	EB	WB	SB
Directions Served	L	TR	R
Maximum Queue (ft)	91	36	145
Average Queue (ft)	35	2	77
95th Queue (ft)	72	14	130
Link Distance (ft)		154	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Road & Church Dwy Access, All Intervals

Movement	EB	WB	SB
Directions Served	L	TR	R
Maximum Queue (ft)	91	36	145
Average Queue (ft)	41	1	78
95th Queue (ft)	78	12	127
Link Distance (ft)		154	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement	B31
Directions Served	T
Maximum Queue (ft)	651
Average Queue (ft)	177
95th Queue (ft)	640
Link Distance (ft)	504
Upstream Blk Time (%)	1
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B31
Directions Served	T
Maximum Queue (ft)	643
Average Queue (ft)	85
95th Queue (ft)	440
Link Distance (ft)	504
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B31
Directions Served	T
Maximum Queue (ft)	651
Average Queue (ft)	108
95th Queue (ft)	497
Link Distance (ft)	504
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 33: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB	SB	SB
Directions Served	L	R	T	R
Maximum Queue (ft)	139	24	31	52
Average Queue (ft)	88	13	4	7
95th Queue (ft)	155	32	22	38
Link Distance (ft)	361	361	360	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 33: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	SB	SB
Directions Served	L	R	T	R
Maximum Queue (ft)	134	25	32	51
Average Queue (ft)	76	12	1	2
95th Queue (ft)	125	31	12	20
Link Distance (ft)	361	361	360	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 33: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	SB	SB
Directions Served	L	R	T	R
Maximum Queue (ft)	139	25	32	52
Average Queue (ft)	79	13	2	4
95th Queue (ft)	133	31	15	25
Link Distance (ft)	361	361	360	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 36: Boone Road & Cultus Ave, Interval #1

Movement	NB
Directions Served	LR
Maximum Queue (ft)	51
Average Queue (ft)	29
95th Queue (ft)	52
Link Distance (ft)	389
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 36: Boone Road & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	30	53
Average Queue (ft)	4	29
95th Queue (ft)	20	46
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 36: Boone Road & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	30	53
Average Queue (ft)	3	29
95th Queue (ft)	17	48
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Nework Summary

Network wide Queuing Penalty, Interval #1: 1407
Network wide Queuing Penalty, Interval #2: 1238
Network wide Queuing Penalty, All Intervals: 1280

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	556	498	229	189	189	187	115	71	177	30	92
Average Queue (ft)	8	181	179	167	126	98	85	66	40	130	4	23
95th Queue (ft)	28	472	449	233	175	187	179	119	87	183	22	54
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		7										0
Queuing Penalty (veh)		0										0

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	458	453	236	178	230	230	137	52	199	30	77
Average Queue (ft)	4	165	173	148	106	60	66	73	16	94	4	30
95th Queue (ft)	18	391	403	225	162	144	152	128	44	161	19	69
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		5								0		
Queuing Penalty (veh)		0								0		

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	556	498	236	189	230	230	137	71	199	30	92
Average Queue (ft)	5	169	175	153	111	69	71	71	22	103	4	29
95th Queue (ft)	21	413	414	229	167	159	159	126	60	172	20	66
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		5								0		0
Queuing Penalty (veh)		0								0		0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	153	454	491	72	605	593	251	287	222	53	175	491
Average Queue (ft)	74	297	309	59	384	306	65	180	123	27	116	417
95th Queue (ft)	151	445	467	79	550	512	196	275	232	51	192	536
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		20			36	7		0	2		0	49
Queuing Penalty (veh)		11			19	7		0	6		0	112

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	122
95th Queue (ft)	185
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	1
Queuing Penalty (veh)	4

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	544	534	226	580	507	237	249	155	69	176	679
Average Queue (ft)	75	310	303	92	303	191	27	151	70	28	81	264
95th Queue (ft)	178	480	457	230	507	371	107	223	127	61	158	471
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		20			22	3	0				2	32
Queuing Penalty (veh)		10			11	3	0				11	70

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	149
Average Queue (ft)	57
95th Queue (ft)	150
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	544	534	226	605	593	251	287	222	69	176	679
Average Queue (ft)	74	306	305	84	323	218	36	158	83	28	89	301
95th Queue (ft)	172	472	459	207	527	422	135	239	165	59	170	520
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		20			25	4	0	0	0		2	37
Queuing Penalty (veh)		10			13	4	0	0	1		8	81

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	72
95th Queue (ft)	171
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	1

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	226	1530	1511	151	244	267	286	170	268	1263	1263	264
Average Queue (ft)	125	1456	1297	76	189	233	222	101	255	1095	976	98
95th Queue (ft)	286	1713	1705	186	267	331	326	203	259	1528	1465	251
Link Distance (ft)		1496	1496							1248	1248	
Upstream Blk Time (%)		66	16							36	1	
Queuing Penalty (veh)		0	0							0	0	
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)		81	22	0	14	12	24	1	91	5	11	0
Queuing Penalty (veh)		85	46	0	45	31	75	4	365	9	30	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	184	799	807
Average Queue (ft)	165	799	799
95th Queue (ft)	172	800	803
Link Distance (ft)		784	784
Upstream Blk Time (%)		61	55
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	77	16	
Queuing Penalty (veh)	412	35	

Intersection: 7: Boone Road & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	42	120	84	143	49	126	180	244	268
Average Queue (ft)	23	49	46	105	35	30	118	121	123
95th Queue (ft)	51	99	90	156	50	95	190	248	234
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		4					11		
Queuing Penalty (veh)		3					2		

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	105	74	106	124	51	41	115	214	160
Average Queue (ft)	33	27	55	77	20	10	57	104	79
95th Queue (ft)	83	62	94	127	45	33	106	183	156
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	1						1		
Queuing Penalty (veh)	1						0		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	105	120	106	143	51	126	180	244	268
Average Queue (ft)	31	32	53	84	24	15	72	108	90
95th Queue (ft)	77	74	94	138	49	55	142	202	181
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	1	1					3		
Queuing Penalty (veh)	1	1					1		

Intersection: 8: Boone Road & Church Dwy Access, Interval #1

Movement	EB	WB	SB
Directions Served	L	TR	R
Maximum Queue (ft)	134	22	159
Average Queue (ft)	57	0	103
95th Queue (ft)	121	0	166
Link Distance (ft)		154	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Road & Church Dwy Access, Interval #2

Movement	EB	WB	SB
Directions Served	L	TR	R
Maximum Queue (ft)	87	69	140
Average Queue (ft)	35	8	69
95th Queue (ft)	78	41	107
Link Distance (ft)		154	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Road & Church Dwy Access, All Intervals

Movement	EB	WB	SB
Directions Served	L	TR	R
Maximum Queue (ft)	134	69	159
Average Queue (ft)	40	6	77
95th Queue (ft)	92	35	128
Link Distance (ft)		154	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement	B31	B22
Directions Served	T	T
Maximum Queue (ft)	651	744
Average Queue (ft)	93	106
95th Queue (ft)	469	536
Link Distance (ft)	504	1514
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B31
Directions Served	T
Maximum Queue (ft)	652
Average Queue (ft)	118
95th Queue (ft)	533
Link Distance (ft)	504
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B31	B22
Directions Served	T	T
Maximum Queue (ft)	652	744
Average Queue (ft)	112	26
95th Queue (ft)	518	250
Link Distance (ft)	504	1514
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB
Directions Served	L	R
Maximum Queue (ft)	213	24
Average Queue (ft)	95	13
95th Queue (ft)	181	31
Link Distance (ft)	361	361
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	90	25	31	74
Average Queue (ft)	62	11	1	6
95th Queue (ft)	88	31	12	37
Link Distance (ft)	361	361	426	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 33: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	213	25	31	74
Average Queue (ft)	70	11	1	4
95th Queue (ft)	124	31	10	32
Link Distance (ft)	361	361	426	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 36: Boone Road & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	9	27
95th Queue (ft)	32	45
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Road & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	31	32
Average Queue (ft)	1	27
95th Queue (ft)	12	44
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Road & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	3	27
95th Queue (ft)	19	44
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 1429
Network wide Queuing Penalty, Interval #2: 1336
Network wide Queuing Penalty, All Intervals: 1359

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	325	297	194	215	127	123	71	52	211	29	53
Average Queue (ft)	4	135	99	142	147	43	61	45	29	120	4	24
95th Queue (ft)	20	339	264	214	248	116	136	80	62	217	21	60
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		7								0		
Queuing Penalty (veh)		0								0		

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	23	472	461	298	310	144	166	132	354	237	30	72
Average Queue (ft)	2	261	274	156	129	61	66	75	48	141	5	37
95th Queue (ft)	10	482	498	262	247	127	152	126	166	240	21	70
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		13								4		
Queuing Penalty (veh)		1								5		

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	472	461	298	310	144	166	132	354	237	30	72
Average Queue (ft)	2	231	232	152	133	57	65	67	44	136	5	34
95th Queue (ft)	13	465	476	252	248	126	148	120	148	235	21	69
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		12								3		
Queuing Penalty (veh)		1								4		

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	115	405	387	70	388	349	251	281	92	48	148	520
Average Queue (ft)	62	269	257	34	265	199	91	138	39	32	80	316
95th Queue (ft)	109	398	399	69	386	324	256	244	87	59	138	549
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		15			25	8	0	0			3	31
Queuing Penalty (veh)		8			13	8	0	0			14	71

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	79
95th Queue (ft)	181
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	582	562	225	477	454	48	289	158	49	176	679
Average Queue (ft)	84	313	319	56	303	213	23	183	75	24	104	498
95th Queue (ft)	192	510	513	132	428	362	42	270	131	51	194	848
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												20
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		23			25	6		0			4	51
Queuing Penalty (veh)		11			12	5		0			18	110

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	71
95th Queue (ft)	182
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	582	562	225	477	454	251	289	158	49	176	679
Average Queue (ft)	79	302	304	51	294	210	39	172	66	26	98	454
95th Queue (ft)	177	488	492	121	421	354	135	269	126	53	183	804
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												15
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		21			25	6	0	0			4	46
Queuing Penalty (veh)		10			12	6	0	0			17	100

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	73
95th Queue (ft)	182
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	244	1530	1511	176	226	267	267	170	274	1262	1270	266
Average Queue (ft)	124	1360	1189	45	201	233	224	99	252	733	682	112
95th Queue (ft)	279	1812	1750	152	260	299	311	200	280	1199	1125	283
Link Distance (ft)		1496	1496							1248	1248	
Upstream Blk Time (%)		47	15							1	0	
Queuing Penalty (veh)		0	0							0	0	
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)	0	82	17	1	11	13	25	1	82	7	15	0
Queuing Penalty (veh)	0	86	35	3	35	36	80	3	327	14	40	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	166	799	800
Average Queue (ft)	164	794	795
95th Queue (ft)	168	836	821
Link Distance (ft)		784	784
Upstream Blk Time (%)		48	42
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	64	27	
Queuing Penalty (veh)	343	59	

Intersection: 7: Boone Road & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	63	116	126	145	29	21	111	202	136
Average Queue (ft)	26	57	61	94	18	11	48	107	97
95th Queue (ft)	57	103	107	131	34	27	98	187	152
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		2					2		
Queuing Penalty (veh)		1					0		

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	126	163	86	145	96	18	157	221	287
Average Queue (ft)	42	39	54	76	30	1	73	112	74
95th Queue (ft)	95	102	93	133	78	7	135	202	186
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	1					3		
Queuing Penalty (veh)	1	1					0		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	126	163	126	145	96	21	157	221	287
Average Queue (ft)	38	44	56	80	27	3	67	111	80
95th Queue (ft)	88	104	97	135	70	15	129	198	182
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	2					3		
Queuing Penalty (veh)	0	1					0		

Intersection: 8: Boone Road & Church Dwy Access, Interval #1

Movement	EB	WB	SB
Directions Served	L	TR	R
Maximum Queue (ft)	111	20	97
Average Queue (ft)	63	3	67
95th Queue (ft)	117	15	105
Link Distance (ft)		154	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Road & Church Dwy Access, Interval #2

Movement	EB	WB	SB	SB
Directions Served	L	TR	LT	R
Maximum Queue (ft)	69	22	32	101
Average Queue (ft)	41	1	1	63
95th Queue (ft)	77	8	12	96
Link Distance (ft)		154	223	223
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Boone Road & Church Dwy Access, All Intervals

Movement	EB	WB	SB	SB
Directions Served	L	TR	LT	R
Maximum Queue (ft)	111	22	32	101
Average Queue (ft)	46	1	1	64
95th Queue (ft)	90	10	11	98
Link Distance (ft)		154	223	223
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B31	B22	B22
Directions Served	T	T	
Maximum Queue (ft)	652	616	508
Average Queue (ft)	59	53	23
95th Queue (ft)	368	331	198
Link Distance (ft)	504	1514	1514
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	1		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B31	B22	B22
Directions Served	T	T	
Maximum Queue (ft)	652	616	508
Average Queue (ft)	45	40	18
95th Queue (ft)	317	285	170
Link Distance (ft)	504	1514	1514
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 33: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB
Directions Served	L	R
Maximum Queue (ft)	263	24
Average Queue (ft)	150	13
95th Queue (ft)	293	32
Link Distance (ft)	361	361
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	LT	T	R
Maximum Queue (ft)	173	25	31	51	76
Average Queue (ft)	84	11	1	2	5
95th Queue (ft)	134	29	12	20	33
Link Distance (ft)	361	361	426	360	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 33: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	LT	T	R
Maximum Queue (ft)	263	25	31	51	76
Average Queue (ft)	100	12	1	2	4
95th Queue (ft)	195	30	11	17	28
Link Distance (ft)	361	361	426	360	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 36: Boone Road & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	54	32
Average Queue (ft)	12	27
95th Queue (ft)	45	45
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	1	

Intersection: 36: Boone Road & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	7	23
95th Queue (ft)	28	45
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Road & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	54	32
Average Queue (ft)	8	24
95th Queue (ft)	33	46
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 1063
Network wide Queuing Penalty, Interval #2: 1375
Network wide Queuing Penalty, All Intervals: 1297

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	21	200	244	155	178	125	122	136	72	225	30	31
Average Queue (ft)	11	77	76	140	102	51	50	90	35	140	6	22
95th Queue (ft)	24	174	202	164	181	120	119	126	71	217	25	39
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		0								1		
Queuing Penalty (veh)		0								1		

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	532	520	310	325	125	167	250	358	226	30	74
Average Queue (ft)	8	223	214	164	112	48	67	69	73	151	2	30
95th Queue (ft)	27	489	469	267	214	117	149	154	232	246	15	62
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		8								6		
Queuing Penalty (veh)		0								6		

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	28	532	520	310	325	125	167	250	358	226	30	74
Average Queue (ft)	8	188	181	158	110	48	63	74	64	149	3	28
95th Queue (ft)	27	446	431	250	206	118	143	152	206	239	18	58
Link Distance (ft)		962	962			889	889		354			627
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		6								4		
Queuing Penalty (veh)		0								5		

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	453	442	72	366	319	46	303	243	226	175	667
Average Queue (ft)	67	283	291	45	287	200	25	211	144	21	111	435
95th Queue (ft)	176	438	419	71	410	322	42	326	179	39	203	670
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		15			21	6		4	3		7	53
Queuing Penalty (veh)		8			11	5		7	9		35	121

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	95
95th Queue (ft)	197
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	71	492	496	70	437	365	243	290	158	50	194	679
Average Queue (ft)	27	263	265	34	250	195	32	192	83	23	102	332
95th Queue (ft)	54	409	399	69	376	319	111	293	143	46	196	658
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		15			16	5	0	0			4	40
Queuing Penalty (veh)		7			8	4	0	0			17	87

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	66
95th Queue (ft)	161
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	492	496	72	437	365	243	303	243	226	194	679
Average Queue (ft)	37	268	272	37	259	196	31	197	98	23	104	357
95th Queue (ft)	102	417	405	71	387	319	100	302	167	45	198	672
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200			200			225	300		200	150	
Storage Blk Time (%)		15			17	5	0	1	1		5	43
Queuing Penalty (veh)		7			9	5	0	2	2		21	96

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	73
95th Queue (ft)	172
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	244	1526	1523	170	225	267	267	151	256	1263	1263	266
Average Queue (ft)	141	1493	1316	68	195	233	233	97	255	1131	1038	100
95th Queue (ft)	287	1589	1807	172	254	315	321	198	259	1509	1522	269
Link Distance (ft)		1496	1496							1248	1248	
Upstream Blk Time (%)		62	21							40	4	
Queuing Penalty (veh)		0	0							0	0	
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)	0	81	19	0	13	15	31	2	92	5	10	0
Queuing Penalty (veh)	0	85	41	0	43	40	99	6	367	9	27	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	166	815	800
Average Queue (ft)	159	800	798
95th Queue (ft)	189	806	809
Link Distance (ft)		784	784
Upstream Blk Time (%)		57	47
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	60	27	
Queuing Penalty (veh)	319	60	

Intersection: 7: Boone Road & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	60	34	64	183	110	21	175	198	183
Average Queue (ft)	46	19	39	116	41	4	98	115	118
95th Queue (ft)	60	40	69	193	91	16	165	217	216
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)							5		
Queuing Penalty (veh)							1		

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	63	97	101	121	129	21	155	175	201
Average Queue (ft)	30	29	50	77	30	8	66	89	61
95th Queue (ft)	64	69	90	132	74	24	120	161	137
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		0					2		
Queuing Penalty (veh)		0					0		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	63	97	101	183	129	21	175	198	201
Average Queue (ft)	34	27	48	87	32	7	74	95	75
95th Queue (ft)	66	64	86	153	79	22	135	178	166
Link Distance (ft)		304		462			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		0					3		
Queuing Penalty (veh)		0					0		

Intersection: 8: Boone Road & Church Dwy Access, Interval #1

Movement	EB	WB	SB
Directions Served	L	TR	R
Maximum Queue (ft)	188	21	236
Average Queue (ft)	99	3	120
95th Queue (ft)	185	15	213
Link Distance (ft)		154	223
Upstream Blk Time (%)			2
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	200		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 8: Boone Road & Church Dwy Access, Interval #2

Movement	EB	SB	SB
Directions Served	L	LT	R
Maximum Queue (ft)	87	32	99
Average Queue (ft)	38	1	64
95th Queue (ft)	76	12	89
Link Distance (ft)		223	223
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Road & Church Dwy Access, All Intervals

Movement	EB	WB	SB	SB
Directions Served	L	TR	LT	R
Maximum Queue (ft)	188	21	32	236
Average Queue (ft)	53	1	1	77
95th Queue (ft)	122	7	11	142
Link Distance (ft)		154	223	223
Upstream Blk Time (%)				1
Queuing Penalty (veh)				0
Storage Bay Dist (ft)	200			
Storage Blk Time (%)	0			
Queuing Penalty (veh)	0			

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement	B31	B22
Directions Served	T	T
Maximum Queue (ft)	650	714
Average Queue (ft)	186	0
95th Queue (ft)	670	0
Link Distance (ft)	504	1514
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B31	B22
Directions Served	T	T
Maximum Queue (ft)	651	778
Average Queue (ft)	114	35
95th Queue (ft)	512	303
Link Distance (ft)	504	1514
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B31	B22
Directions Served	T	T
Maximum Queue (ft)	651	778
Average Queue (ft)	131	27
95th Queue (ft)	555	261
Link Distance (ft)	504	1514
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 33: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB	NB
Directions Served	L	R	LT
Maximum Queue (ft)	92	25	32
Average Queue (ft)	70	13	5
95th Queue (ft)	95	32	23
Link Distance (ft)	361	361	426
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 33: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	SB
Directions Served	L	R	R
Maximum Queue (ft)	201	46	123
Average Queue (ft)	79	10	12
95th Queue (ft)	146	33	69
Link Distance (ft)	361	361	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			1
Queuing Penalty (veh)			1

Intersection: 33: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	201	46	32	123
Average Queue (ft)	77	11	1	9
95th Queue (ft)	137	33	11	59
Link Distance (ft)	361	361	426	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				1

Intersection: 36: Boone Road & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	9	21
95th Queue (ft)	32	44
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Road & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	4	21
95th Queue (ft)	19	45
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Road & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	5	21
95th Queue (ft)	22	44
Link Distance (ft)		389
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 1347
Network wide Queuing Penalty, Interval #2: 1262
Network wide Queuing Penalty, All Intervals: 1283

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	396	416	214	207	61	63	195	94	220	30	51
Average Queue (ft)	172	191	157	94	29	35	90	48	111	13	28
95th Queue (ft)	399	419	215	202	66	73	194	95	205	33	51
Link Distance (ft)	968	968			897	897		342			629
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			400	400			225		200	100	
Storage Blk Time (%)	11								1		
Queuing Penalty (veh)	1								1		

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	225	386	411	290	315	149	170	202	118	224	30	74
Average Queue (ft)	20	164	159	186	139	41	57	92	46	106	1	35
95th Queue (ft)	97	361	367	279	308	100	136	170	102	193	12	67
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		8								0		
Queuing Penalty (veh)		0								1		

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	225	396	416	290	315	149	170	202	118	224	30	74
Average Queue (ft)	15	166	167	179	128	38	52	91	47	108	4	33
95th Queue (ft)	84	371	381	267	288	93	125	177	101	196	20	64
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		9								1		
Queuing Penalty (veh)		0								1		

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	25	368	344	226	389	364	150	281	156	71	87	318
Average Queue (ft)	11	247	240	86	275	201	15	185	75	30	34	129
95th Queue (ft)	28	395	377	184	420	363	32	295	150	62	91	220
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		8			17	11	0	0				19
Queuing Penalty (veh)		3			13	9	0	0				14

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	147
Average Queue (ft)	24
95th Queue (ft)	107
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	48	303	324	226	364	262	47	324	153	69	173	248
Average Queue (ft)	17	186	189	84	207	124	15	172	86	28	39	128
95th Queue (ft)	42	292	319	181	374	248	37	290	145	53	109	227
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		7			9	7		2				12
Queuing Penalty (veh)		2			7	5		5				8

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	146
Average Queue (ft)	29
95th Queue (ft)	107
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	48	368	344	226	389	364	150	324	156	71	173	318
Average Queue (ft)	16	201	201	84	223	142	15	175	83	28	38	129
95th Queue (ft)	40	326	338	182	392	287	36	292	147	55	105	225
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		7			11	8	0	2				14
Queuing Penalty (veh)		2			8	6	0	3				10

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	147
Average Queue (ft)	28
95th Queue (ft)	107
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	225	1524	1511	183	225	262	262	151	255	1027	992	266
Average Queue (ft)	161	1277	1029	59	203	173	133	100	233	620	598	144
95th Queue (ft)	293	1806	1551	175	260	289	244	178	314	1008	958	324
Link Distance (ft)		1496	1496							1247	1247	
Upstream Blk Time (%)		40	2									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)	0	79	18	1	18	2	9	2	69	15	19	0
Queuing Penalty (veh)	0	102	35	3	35	6	27	5	285	22	57	1

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	184	818	810
Average Queue (ft)	165	793	644
95th Queue (ft)	171	849	1085
Link Distance (ft)		784	784
Upstream Blk Time (%)		72	3
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	87	11	
Queuing Penalty (veh)	351	31	

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	42	49	85	75	32	64	354	217	70
Average Queue (ft)	25	32	54	33	24	19	99	171	36
95th Queue (ft)	56	49	90	73	41	53	275	233	72
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)							8		
Queuing Penalty (veh)							2		

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	42	162	106	77	52	125	154	307	157
Average Queue (ft)	23	52	52	27	22	20	92	185	58
95th Queue (ft)	44	121	98	62	45	63	148	268	126
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		2					6		
Queuing Penalty (veh)		1					2		

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	42	162	106	77	52	125	354	307	157
Average Queue (ft)	24	47	52	28	22	20	94	182	52
95th Queue (ft)	47	110	96	65	44	61	193	260	116
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		2					6		
Queuing Penalty (veh)		1					2		

Intersection: 8: Boone Rd & Church Dwy Access, Interval #1

Movement	EB	WB	SB
Directions Served	L	TR	TR
Maximum Queue (ft)	78	22	98
Average Queue (ft)	59	3	77
95th Queue (ft)	101	16	103
Link Distance (ft)		142	287
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Rd & Church Dwy Access, Interval #2

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	TR
Maximum Queue (ft)	134	22	31	172
Average Queue (ft)	40	1	1	72
95th Queue (ft)	95	9	12	115
Link Distance (ft)		142	287	287
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Boone Rd & Church Dwy Access, All Intervals

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	TR
Maximum Queue (ft)	134	22	31	172
Average Queue (ft)	44	2	1	73
95th Queue (ft)	99	11	10	113
Link Distance (ft)		142	287	287
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement	B29
Directions Served	T
Maximum Queue (ft)	643
Average Queue (ft)	184
95th Queue (ft)	662
Link Distance (ft)	494
Upstream Blk Time (%)	1
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B29
Directions Served	T
Maximum Queue (ft)	642
Average Queue (ft)	113
95th Queue (ft)	510
Link Distance (ft)	494
Upstream Blk Time (%)	0
Queuing Penalty (veh)	2
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B29
Directions Served	T
Maximum Queue (ft)	643
Average Queue (ft)	130
95th Queue (ft)	551
Link Distance (ft)	494
Upstream Blk Time (%)	1
Queuing Penalty (veh)	3
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB
Directions Served	L	R
Maximum Queue (ft)	110	38
Average Queue (ft)	84	8
95th Queue (ft)	112	32
Link Distance (ft)	265	265
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 34: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	280	37	29	96
Average Queue (ft)	97	17	3	5
95th Queue (ft)	177	34	16	39
Link Distance (ft)	265	265	438	
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 34: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	280	38	29	96
Average Queue (ft)	94	15	2	4
95th Queue (ft)	166	35	14	34
Link Distance (ft)	265	265	438	
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 36: Boone Rd & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	55	57
Average Queue (ft)	17	34
95th Queue (ft)	51	50
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	74
Average Queue (ft)	4	30
95th Queue (ft)	22	57
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	55	74
Average Queue (ft)	7	31
95th Queue (ft)	32	56
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 1025
Network wide Queuing Penalty, Interval #2: 1276
Network wide Queuing Penalty, All Intervals: 1213

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	31	440	427	360	349	103	124	157	310	224	31	74
Average Queue (ft)	4	225	223	206	122	58	50	102	83	151	7	47
95th Queue (ft)	22	447	434	319	290	100	103	146	246	270	26	87
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		12								3		
Queuing Penalty (veh)		1								5		

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	30	433	414	313	347	146	141	179	285	226	31	98
Average Queue (ft)	8	237	236	179	105	50	64	85	46	117	2	54
95th Queue (ft)	27	412	412	281	232	112	133	152	140	209	14	95
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		13								1		4
Queuing Penalty (veh)		1								2		0

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	31	440	427	360	349	146	141	179	310	226	31	98
Average Queue (ft)	7	234	233	185	109	52	60	89	55	125	3	52
95th Queue (ft)	26	422	418	292	248	110	127	153	172	227	17	93
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		13								2		3
Queuing Penalty (veh)		1								3		0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	111	301	333	93	566	221	148	293	116	68	64	167
Average Queue (ft)	37	183	197	70	314	182	40	195	92	32	42	114
95th Queue (ft)	75	291	334	106	569	224	116	309	124	64	72	163
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		5			13	9		0				12
Queuing Penalty (veh)		2			10	7		0				9

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	18
Average Queue (ft)	9
95th Queue (ft)	23
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	225	369	389	221	348	271	149	309	200	69	176	309
Average Queue (ft)	42	205	212	63	205	124	23	175	89	28	36	159
95th Queue (ft)	117	357	368	137	321	237	50	266	162	49	97	302
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		8			9	6		0	0			17
Queuing Penalty (veh)		3			7	5		0	1			12

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	149
Average Queue (ft)	12
95th Queue (ft)	64
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	225	369	389	221	566	271	149	309	200	69	176	309
Average Queue (ft)	41	199	208	65	231	138	27	180	89	29	38	148
95th Queue (ft)	109	343	360	131	409	247	73	278	156	54	93	279
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		8			10	7		0	0			16
Queuing Penalty (veh)		3			8	6		0	0			11

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	149
Average Queue (ft)	12
95th Queue (ft)	57
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	226	1515	1510	159	225	262	260	151	256	1262	1262	266
Average Queue (ft)	129	1343	1042	64	184	143	132	70	232	527	504	113
95th Queue (ft)	269	1795	1480	169	267	261	245	167	305	979	946	281
Link Distance (ft)		1496	1496							1247	1247	
Upstream Blk Time (%)		39	2							2	2	
Queuing Penalty (veh)		0	0							0	0	
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)	0	80	21	0	18	2	9	2	56	11	16	0
Queuing Penalty (veh)	0	104	42	0	35	5	26	5	230	16	50	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	184	818	800
Average Queue (ft)	167	784	648
95th Queue (ft)	175	841	1039
Link Distance (ft)		784	784
Upstream Blk Time (%)		60	2
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	87	8	
Queuing Penalty (veh)	352	23	

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	41	75	84	78	73	43	157	307	72
Average Queue (ft)	17	21	49	36	20	16	96	186	25
95th Queue (ft)	45	39	83	75	46	39	154	334	76
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)							3		
Queuing Penalty (veh)							1		

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	80	121	146	77	71	125	156	374	410
Average Queue (ft)	29	38	50	29	24	23	75	223	58
95th Queue (ft)	62	91	105	71	60	71	134	382	193
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									0
Queuing Penalty (veh)									2
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	1				0	2	2	
Queuing Penalty (veh)	0	0				0	1	4	

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	80	121	146	78	73	125	157	374	410
Average Queue (ft)	26	34	50	31	23	21	80	214	50
95th Queue (ft)	59	82	100	72	57	64	141	373	173
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									0
Queuing Penalty (veh)									2
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	1				0	2	2	
Queuing Penalty (veh)	0	0				0	1	3	

Intersection: 8: Boone Rd & Church Dwy Access, Interval #1

Movement	EB	SB
Directions Served	L	TR
Maximum Queue (ft)	77	97
Average Queue (ft)	45	63
95th Queue (ft)	87	92
Link Distance (ft)		287
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Boone Rd & Church Dwy Access, Interval #2

Movement	EB	WB	SB
Directions Served	L	TR	TR
Maximum Queue (ft)	140	26	122
Average Queue (ft)	55	3	69
95th Queue (ft)	109	16	104
Link Distance (ft)		142	287
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Rd & Church Dwy Access, All Intervals

Movement	EB	WB	SB
Directions Served	L	TR	TR
Maximum Queue (ft)	140	26	122
Average Queue (ft)	53	2	67
95th Queue (ft)	105	14	102
Link Distance (ft)		142	287
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B29
Directions Served	T
Maximum Queue (ft)	643
Average Queue (ft)	229
95th Queue (ft)	730
Link Distance (ft)	494
Upstream Blk Time (%)	0
Queuing Penalty (veh)	2
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B29
Directions Served	T
Maximum Queue (ft)	643
Average Queue (ft)	174
95th Queue (ft)	639
Link Distance (ft)	494
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB
Directions Served	L	R
Maximum Queue (ft)	130	22
Average Queue (ft)	90	17
95th Queue (ft)	125	28
Link Distance (ft)	265	265
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 34: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	226	38	22	124
Average Queue (ft)	88	12	1	7
95th Queue (ft)	177	31	8	51
Link Distance (ft)	265	265	438	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 34: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	226	38	22	124
Average Queue (ft)	89	13	1	5
95th Queue (ft)	168	31	7	44
Link Distance (ft)	265	265	438	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 36: Boone Rd & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	9	26
95th Queue (ft)	32	44
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	7	28
95th Queue (ft)	28	42
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	7	27
95th Queue (ft)	29	43
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 969
Network wide Queuing Penalty, Interval #2: 1201
Network wide Queuing Penalty, All Intervals: 1143

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	TR
Maximum Queue (ft)	31	281	286	240	171	85	125	179	52	163	53
Average Queue (ft)	4	120	122	158	60	37	47	122	27	86	22
95th Queue (ft)	23	286	285	260	146	93	129	196	52	149	59
Link Distance (ft)		968	968			897	897		342		629
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	200			400	400			225		200	
Storage Blk Time (%)		6									
Queuing Penalty (veh)		0									

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	31	448	451	301	303	106	171	138	114	167	31	96
Average Queue (ft)	6	198	191	178	120	40	59	81	14	108	1	35
95th Queue (ft)	25	412	405	275	237	93	134	137	44	174	12	79
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		9										0
Queuing Penalty (veh)		0										0

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	31	448	451	301	303	106	171	179	114	167	31	96
Average Queue (ft)	6	179	174	173	106	39	57	91	17	102	1	32
95th Queue (ft)	24	390	383	272	223	93	133	158	48	170	10	75
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		8										0
Queuing Penalty (veh)		0										0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	49	354	369	172	387	333	150	325	200	221	64	258
Average Queue (ft)	28	212	229	95	253	189	58	171	101	32	36	157
95th Queue (ft)	55	366	367	183	381	312	154	292	164	48	70	255
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		10			11	10		1	3	0		24
Queuing Penalty (veh)		4			8	8		2	10	0		18

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	58
Average Queue (ft)	8
95th Queue (ft)	42
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	434	424	226	374	359	139	325	419	220	176	216
Average Queue (ft)	37	216	218	68	178	120	26	213	129	35	48	146
95th Queue (ft)	113	361	374	170	300	259	70	334	321	107	126	217
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)									1			
Queuing Penalty (veh)									6			
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		7			7	8	0	3	0	0		22
Queuing Penalty (veh)		3			5	6	0	6	2	0		15

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	22
95th Queue (ft)	90
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	434	424	226	387	359	150	325	419	221	176	258
Average Queue (ft)	35	215	221	74	196	136	34	203	122	34	45	149
95th Queue (ft)	103	362	372	175	330	280	99	327	294	98	115	227
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)									1			
Queuing Penalty (veh)									4			
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		8			8	8	0	2	1	0		23
Queuing Penalty (veh)		3			6	7	0	5	4	0		16

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	151
Average Queue (ft)	19
95th Queue (ft)	81
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	244	1511	1511	179	225	262	240	151	256	1112	1098	266
Average Queue (ft)	178	1232	919	55	195	139	121	83	238	786	758	141
95th Queue (ft)	296	1830	1435	168	263	235	191	171	304	1256	1212	302
Link Distance (ft)		1496	1496							1247	1247	
Upstream Blk Time (%)		19	0									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)	3	81	19	0	16	1	6	1	76	15	21	0
Queuing Penalty (veh)	6	105	39	0	33	3	18	2	317	22	64	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	178	818	799
Average Queue (ft)	165	769	686
95th Queue (ft)	170	905	1016
Link Distance (ft)		784	784
Upstream Blk Time (%)		58	7
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	87	14	
Queuing Penalty (veh)	351	40	

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	104	92	148	57	50	44	111	375	409
Average Queue (ft)	29	36	71	20	32	16	71	277	95
95th Queue (ft)	90	82	132	54	60	39	109	420	308
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									3
Queuing Penalty (veh)									15
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	1	0					2	5	
Queuing Penalty (veh)	1	0					1	10	

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	84	79	106	56	113	125	282	374	449
Average Queue (ft)	27	39	59	28	31	21	125	201	59
95th Queue (ft)	69	77	93	52	73	78	243	319	205
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									0
Queuing Penalty (veh)									3
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0						12	0	
Queuing Penalty (veh)	0						4	1	

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	104	92	148	57	113	125	282	375	449
Average Queue (ft)	27	38	62	26	31	20	112	219	68
95th Queue (ft)	75	78	105	54	70	71	223	355	234
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									1
Queuing Penalty (veh)									6
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	0					10	2	
Queuing Penalty (veh)	0	0					3	3	

Intersection: 8: Boone Rd & Church Dwy Access, Interval #1

Movement	EB	SB
Directions Served	L	TR
Maximum Queue (ft)	142	210
Average Queue (ft)	80	96
95th Queue (ft)	157	179
Link Distance (ft)		287
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Boone Rd & Church Dwy Access, Interval #2

Movement	EB	WB	SB
Directions Served	L	TR	TR
Maximum Queue (ft)	117	43	132
Average Queue (ft)	51	5	66
95th Queue (ft)	102	25	103
Link Distance (ft)		142	287
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Rd & Church Dwy Access, All Intervals

Movement	EB	WB	SB
Directions Served	L	TR	TR
Maximum Queue (ft)	142	43	210
Average Queue (ft)	58	4	73
95th Queue (ft)	120	22	130
Link Distance (ft)		142	287
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement	B29	B29
Directions Served	T	
Maximum Queue (ft)	643	614
Average Queue (ft)	263	88
95th Queue (ft)	764	442
Link Distance (ft)	494	494
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	3	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B29	B29
Directions Served	T	
Maximum Queue (ft)	652	513
Average Queue (ft)	231	23
95th Queue (ft)	734	200
Link Distance (ft)	494	494
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	6	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B29	B29
Directions Served	T	
Maximum Queue (ft)	652	614
Average Queue (ft)	238	39
95th Queue (ft)	742	276
Link Distance (ft)	494	494
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	5	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 34: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	280	44	32	53
Average Queue (ft)	150	18	5	8
95th Queue (ft)	298	40	23	38
Link Distance (ft)	265	265	438	
Upstream Blk Time (%)	2			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 34: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	LT	T	R
Maximum Queue (ft)	174	21	28	53	74
Average Queue (ft)	86	11	1	2	8
95th Queue (ft)	146	26	11	21	40
Link Distance (ft)	265	265	438	348	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 34: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	LT	T	R
Maximum Queue (ft)	280	44	32	53	74
Average Queue (ft)	101	12	2	2	8
95th Queue (ft)	202	30	15	18	40
Link Distance (ft)	265	265	438	348	
Upstream Blk Time (%)	1				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)					100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 36: Boone Rd & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	74	50
Average Queue (ft)	19	30
95th Queue (ft)	63	53
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	1	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	53	52
Average Queue (ft)	5	30
95th Queue (ft)	28	43
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	74	52
Average Queue (ft)	9	30
95th Queue (ft)	39	46
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 1125
Network wide Queuing Penalty, Interval #2: 1315
Network wide Queuing Penalty, All Intervals: 1268

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	222	288	247	325	64	97	220	52	180	31	134
Average Queue (ft)	131	137	193	143	42	45	99	25	99	10	43
95th Queue (ft)	251	296	293	341	78	95	196	49	182	30	99
Link Distance (ft)	968	968			897	897		342			629
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			400	400			225		200	100	
Storage Blk Time (%)	2						1		0		1
Queuing Penalty (veh)	0						2		0		0

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	31	429	428	282	285	127	188	203	70	225	51	94
Average Queue (ft)	6	201	213	183	114	48	54	106	22	133	8	32
95th Queue (ft)	25	392	415	273	266	98	127	183	55	229	30	74
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		8								1		2
Queuing Penalty (veh)		0								2		0

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	31	429	428	282	325	127	188	220	70	225	51	134
Average Queue (ft)	5	184	195	186	121	47	52	105	23	125	8	35
95th Queue (ft)	22	368	394	278	286	94	120	187	54	221	30	81
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		6						0		1		2
Queuing Penalty (veh)		0						1		1		0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	224	392	409	154	261	170	47	239	196	50	65	257
Average Queue (ft)	47	273	286	69	186	123	27	140	101	18	32	151
95th Queue (ft)	172	385	406	130	280	176	41	233	182	48	47	273
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		12			5	4			3			22
Queuing Penalty (veh)		4			4	3			9			16

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	143
Average Queue (ft)	23
95th Queue (ft)	104
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	68	407	412	173	311	293	151	284	157	50	176	277
Average Queue (ft)	25	235	246	79	183	108	37	171	93	26	45	163
95th Queue (ft)	52	375	402	149	293	212	116	263	167	46	125	259
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		11			7	6	0	0				21
Queuing Penalty (veh)		4			5	5	0	0				15

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	150
Average Queue (ft)	20
95th Queue (ft)	88
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	224	407	412	173	311	293	151	284	196	50	176	277
Average Queue (ft)	30	244	255	77	184	112	35	163	95	24	42	160
95th Queue (ft)	98	381	407	145	290	207	104	258	170	47	112	263
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		11			7	5	0	0	1			22
Queuing Penalty (veh)		4			5	4	0	0	2			15

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	150
Average Queue (ft)	21
95th Queue (ft)	93
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	225	783	746	151	225	262	256	151	256	1262	1262	266
Average Queue (ft)	145	438	395	65	180	166	137	88	239	832	822	107
95th Queue (ft)	280	709	659	169	257	287	235	157	303	1437	1432	270
Link Distance (ft)		1496	1496							1247	1247	
Upstream Blk Time (%)										14	10	
Queuing Penalty (veh)										0	0	
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)	0	58	18	1	12	0	6	1	78	13	23	0
Queuing Penalty (veh)	0	75	35	3	23	0	17	3	325	19	70	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	177	799	799
Average Queue (ft)	163	729	654
95th Queue (ft)	180	995	1014
Link Distance (ft)		784	784
Upstream Blk Time (%)		58	2
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	79	16	
Queuing Penalty (veh)	317	46	

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	40	79	62	99	50	123	132	375	49
Average Queue (ft)	26	43	50	34	29	26	91	274	11
95th Queue (ft)	49	84	73	83	55	93	144	377	40
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)							8	3	
Queuing Penalty (veh)							3	5	

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	80	99	150	78	113	62	238	361	132
Average Queue (ft)	37	31	56	28	31	19	89	204	57
95th Queue (ft)	73	67	105	58	89	50	174	311	105
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	0					4	0	
Queuing Penalty (veh)	0	0					1	1	

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	80	99	150	99	113	123	238	375	132
Average Queue (ft)	34	34	55	29	31	20	89	221	45
95th Queue (ft)	69	72	99	65	82	63	168	337	101
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)	0	0					5	1	
Queuing Penalty (veh)	0	0					2	2	

Intersection: 8: Boone Rd & Church Dwy Access, Interval #1

Movement	EB	SB
Directions Served	L	TR
Maximum Queue (ft)	117	93
Average Queue (ft)	69	66
95th Queue (ft)	111	91
Link Distance (ft)		287
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Boone Rd & Church Dwy Access, Interval #2

Movement	EB	EB	WB	SB
Directions Served	L	TR	TR	TR
Maximum Queue (ft)	98	31	22	116
Average Queue (ft)	43	1	2	67
95th Queue (ft)	87	12	12	102
Link Distance (ft)		478	142	287
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Boone Rd & Church Dwy Access, All Intervals

Movement	EB	EB	WB	SB
Directions Served	L	TR	TR	TR
Maximum Queue (ft)	117	31	22	116
Average Queue (ft)	49	1	1	67
95th Queue (ft)	97	11	10	99
Link Distance (ft)		478	142	287
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement	B29
Directions Served	T
Maximum Queue (ft)	626
Average Queue (ft)	174
95th Queue (ft)	629
Link Distance (ft)	494
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B29
Directions Served	T
Maximum Queue (ft)	642
Average Queue (ft)	194
95th Queue (ft)	663
Link Distance (ft)	494
Upstream Blk Time (%)	0
Queuing Penalty (veh)	2
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B29
Directions Served	T
Maximum Queue (ft)	642
Average Queue (ft)	189
95th Queue (ft)	655
Link Distance (ft)	494
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	LT	T	R
Maximum Queue (ft)	220	22	32	191	123
Average Queue (ft)	134	14	9	27	25
95th Queue (ft)	233	29	33	137	98
Link Distance (ft)	265	265	438	348	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					100
Storage Blk Time (%)					1
Queuing Penalty (veh)					1

Intersection: 34: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	LT	T	R
Maximum Queue (ft)	132	22	29	177	123
Average Queue (ft)	74	13	1	8	6
95th Queue (ft)	109	28	11	69	48
Link Distance (ft)	265	265	438	348	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					100
Storage Blk Time (%)					0
Queuing Penalty (veh)					0

Intersection: 34: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB	SB
Directions Served	L	R	LT	T	R
Maximum Queue (ft)	220	22	32	191	123
Average Queue (ft)	89	13	3	13	10
95th Queue (ft)	160	28	19	90	64
Link Distance (ft)	265	265	438	348	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					100
Storage Blk Time (%)					1
Queuing Penalty (veh)					0

Intersection: 36: Boone Rd & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	31	32
Average Queue (ft)	4	26
95th Queue (ft)	23	44
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	6	27
95th Queue (ft)	25	42
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	32
Average Queue (ft)	5	27
95th Queue (ft)	25	42
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 890
Network wide Queuing Penalty, Interval #2: 1261
Network wide Queuing Penalty, All Intervals: 1168

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #1

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	352	375	291	212	83	145	251	262	223	29	72
Average Queue (ft)	225	224	216	112	21	52	123	56	112	4	27
95th Queue (ft)	419	425	321	230	68	125	214	198	195	21	64
Link Distance (ft)	968	968			897	897		342			629
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			400	400			225		200	100	
Storage Blk Time (%)	8								3		
Queuing Penalty (veh)	0								5		

Intersection: 4: Kuebler Blvd & 27th Avenue, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	TR
Maximum Queue (ft)	31	348	368	245	268	169	185	160	74	223	72
Average Queue (ft)	7	147	155	168	114	43	58	78	33	112	29
95th Queue (ft)	27	313	304	238	216	118	133	135	71	193	72
Link Distance (ft)		968	968			897	897		342		629
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	200			400	400			225		200	
Storage Blk Time (%)		5								1	
Queuing Penalty (veh)		0								1	

Intersection: 4: Kuebler Blvd & 27th Avenue, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	31	352	375	291	268	169	185	251	262	223	29	72
Average Queue (ft)	5	165	172	179	114	38	57	89	39	112	1	29
95th Queue (ft)	23	348	342	267	220	108	131	163	118	193	10	70
Link Distance (ft)		968	968			897	897		342			629
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			400	400			225		200	100	
Storage Blk Time (%)		6								1		
Queuing Penalty (veh)		0								2		

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	71	365	342	226	448	394	151	305	154	28	86	167
Average Queue (ft)	47	235	223	87	255	181	37	201	79	16	37	108
95th Queue (ft)	67	373	358	191	418	366	115	297	148	39	79	187
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		12			14	10		3				7
Queuing Penalty (veh)		4			11	8		7				5

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #1

Movement	SB
Directions Served	R
Maximum Queue (ft)	149
Average Queue (ft)	29
95th Queue (ft)	113
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	570	567	223	329	296	47	325	390	68	175	362
Average Queue (ft)	72	216	237	84	210	137	16	183	112	32	54	162
95th Queue (ft)	197	400	422	169	338	255	37	307	241	58	129	315
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		8			11	8		3	2			20
Queuing Penalty (veh)		3			8	6		6	6			14

Intersection: 5: Kuebler Blvd & Battle Creek Rd, Interval #2

Movement	SB
Directions Served	R
Maximum Queue (ft)	168
Average Queue (ft)	24
95th Queue (ft)	96
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	226	570	567	226	448	394	151	325	390	68	175	362
Average Queue (ft)	66	221	234	85	221	148	21	187	104	28	50	149
95th Queue (ft)	177	395	408	175	362	289	66	306	223	56	120	293
Link Distance (ft)					882	882			398			664
Upstream Blk Time (%)									0			
Queuing Penalty (veh)									0			
Storage Bay Dist (ft)	200			200			125	300		200	150	
Storage Blk Time (%)		9			11	8		3	1			17
Queuing Penalty (veh)		3			9	7		6	4			12

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	168
Average Queue (ft)	25
95th Queue (ft)	100
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	125
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	225	1511	1524	151	226	262	262	169	256	1262	1279	266
Average Queue (ft)	138	1165	871	79	185	141	112	73	253	909	879	134
95th Queue (ft)	266	1666	1370	196	259	255	221	161	268	1459	1418	305
Link Distance (ft)		1496	1496							1247	1247	
Upstream Blk Time (%)		12	0							19	5	
Queuing Penalty (veh)		0	0							0	0	
Storage Bay Dist (ft)	200			125	200			125	230			240
Storage Blk Time (%)		81	18	1	10	4	9	1	86	8	17	0
Queuing Penalty (veh)		105	36	2	20	11	28	3	357	11	53	0

Intersection: 6: Kuebler Blvd & Commercial St, All Intervals

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	184	818	799
Average Queue (ft)	168	780	693
95th Queue (ft)	179	912	1018
Link Distance (ft)		784	784
Upstream Blk Time (%)		67	7
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)	140		
Storage Blk Time (%)	86	11	
Queuing Penalty (veh)	346	33	

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #1

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	62	55	87	78	52	62	175	254	52
Average Queue (ft)	34	32	55	32	33	16	84	176	36
95th Queue (ft)	64	60	86	67	59	50	170	277	53
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)							5		
Queuing Penalty (veh)							2		

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	47	119	126	73	70	125	221	342	94
Average Queue (ft)	23	37	58	20	22	22	93	191	41
95th Queue (ft)	49	83	104	50	52	67	166	296	85
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		1					4	0	
Queuing Penalty (veh)		0					1	0	

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	TR
Maximum Queue (ft)	62	119	126	78	70	125	221	342	94
Average Queue (ft)	26	36	57	23	25	20	91	187	40
95th Queue (ft)	54	78	101	55	55	63	167	292	80
Link Distance (ft)		304		478			616		398
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	100		225		225	100		350	
Storage Blk Time (%)		0					4	0	
Queuing Penalty (veh)		0					1	0	

Intersection: 8: Boone Rd & Church Dwy Access, Interval #1

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	TR
Maximum Queue (ft)	137	22	31	98
Average Queue (ft)	70	6	4	84
95th Queue (ft)	145	22	22	97
Link Distance (ft)		142	287	287
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Boone Rd & Church Dwy Access, Interval #2

Movement	EB	SB	SB
Directions Served	L	L	TR
Maximum Queue (ft)	178	32	137
Average Queue (ft)	55	1	68
95th Queue (ft)	127	12	105
Link Distance (ft)		287	287
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Boone Rd & Church Dwy Access, All Intervals

Movement	EB	WB	SB	SB
Directions Served	L	TR	L	TR
Maximum Queue (ft)	178	22	32	137
Average Queue (ft)	59	1	2	72
95th Queue (ft)	132	10	15	106
Link Distance (ft)		142	287	287
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #1

Movement	B29
Directions Served	T
Maximum Queue (ft)	643
Average Queue (ft)	181
95th Queue (ft)	652
Link Distance (ft)	494
Upstream Blk Time (%)	1
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, Interval #2

Movement	B29
Directions Served	T
Maximum Queue (ft)	642
Average Queue (ft)	252
95th Queue (ft)	752
Link Distance (ft)	494
Upstream Blk Time (%)	1
Queuing Penalty (veh)	3
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Kuebler Blvd & Stroh Ln, All Intervals

Movement	B29
Directions Served	T
Maximum Queue (ft)	643
Average Queue (ft)	235
95th Queue (ft)	730
Link Distance (ft)	494
Upstream Blk Time (%)	1
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 34: 27th Site Access & 27th Avenue, Interval #1

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	176	22	50	31
Average Queue (ft)	121	13	7	9
95th Queue (ft)	183	28	36	32
Link Distance (ft)	265	265	438	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 34: 27th Site Access & 27th Avenue, Interval #2

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	137	44	27	140
Average Queue (ft)	78	16	1	6
95th Queue (ft)	129	37	10	55
Link Distance (ft)	265	265	438	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 34: 27th Site Access & 27th Avenue, All Intervals

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	R
Maximum Queue (ft)	176	44	50	140
Average Queue (ft)	89	15	3	7
95th Queue (ft)	150	35	20	51
Link Distance (ft)	265	265	438	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				100
Storage Blk Time (%)				0
Queuing Penalty (veh)				0

Intersection: 36: Boone Rd & Cultus Ave, Interval #1

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	31	32
Average Queue (ft)	4	31
95th Queue (ft)	22	32
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, Interval #2

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	52
Average Queue (ft)	9	30
95th Queue (ft)	32	43
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 36: Boone Rd & Cultus Ave, All Intervals

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	32	52
Average Queue (ft)	8	30
95th Queue (ft)	30	42
Link Distance (ft)		288
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	50	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Nework Summary

Network wide Queuing Penalty, Interval #1: 1275
Network wide Queuing Penalty, Interval #2: 1280
Network wide Queuing Penalty, All Intervals: 1279

DKS Associates
TRANSPORTATION SOLUTIONS

November 8, 2006

John Miller
Wildwood, Inc.
4985 Battle Creek Rd. SE #201
Salem, OR 97302

Subject: Peer Review of Salem PacTrust Kuebler Project Transportation Impact Study
P06179-000

Dear John:

We have completed the peer review of the September 2006 Salem PacTrust Kuebler transportation impact study conducted by Kittelson & Associates[1]. The applicant is proposing to change the zoning from residential (RA) as exists today to commercial retail (CR). The zone change would allow the applicant to construct a 290,000 square foot shopping center and a 24,000 square foot medical office building for a total of 314,000 square feet. The PacTrust site is located south of Kuebler Boulevard between Battlecreek Road and 27th Avenue SE. The proposed site would have three site access points to the public street system. The following issues were identified during our review.

Traffic Counts

The traffic counts that were utilized in the PacTrust study were conducted in July of 2005. These counts are over 12 months old and were collected in the summer when traffic volumes are typically lower. As part of a separate study, DKS collected counts at the Kuebler Boulevard/I-5 southbound ramp and Kuebler Boulevard/I-5 northbound ramp intersections in September of 2005. These counts were compared to the traffic counts provided in the PacTrust study and were found to be significantly higher, as shown in Table 1.

New traffic counts should be collected by the applicant for the study area intersections to confirm that the July 2005 traffic counts are not lower than typical non-summer traffic volumes. If the traffic volumes are found to be higher than the July 2005 counts, the traffic study should be revised to determine whether additional mitigations would be needed with the increase in volumes.

Table 1: Traffic Count Comparison (PM Peak Hour Total Volume)

Intersection	Kuebler Boulevard/I-5 Southbound Ramp	Kuebler Boulevard/I-5 Northbound Ramp
PacTrust Count (July 2005)	2,480	2,040
Historical Count (September 2005)	2,827 (+347)	2,105 (+65)
Percent Increase	+14%	+3%

[1] *PacTrust Kuebler Project Transportation Impact Study*, Kittelson & Associates, September 2006.

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Kuebler Boulevard/I-5 Southbound Ramp Operations

The PacTrust traffic analysis stated that the Kuebler Boulevard/I-5 southbound ramp currently operates at level of service "C" in the PM peak hour. Based on several recent field observations during PM peak hours, long queues were observed on the southbound ramp that nearly backed on to the I-5 mainline freeway, which is well over 1,000 feet from the intersection. This long queue required several traffic signal cycles to clear, which is representative of level of service "E" or "F" conditions. The existing operation appeared to be significantly worse than level of service "C".

Using the September 2005 traffic count that was 14% higher, the Kuebler Boulevard/I-5 Southbound Ramp was reanalyzed and was found to operate at level of service "E". This finding is consistent with recent field observations.

An intersection's level of service (LOS) is similar to a "report card" rating, based on average vehicle delay. Level of service A, B and C indicates conditions where vehicles can move freely. Level of service D and E are progressively worse. For signalized intersections, level of service "F" represents conditions where the average delay for all vehicles exceeds 80 seconds per vehicle, generally indicated by long queues and delays.

Trip Generation/Conditional Zone Change

Trip generation for the medical office use with existing zoning appears to be overestimated as compared to the future zoning. The "CO" zone property is stated on page 24 to remain the same between the existing and proposed zoning cases. However, the assumptions about the employment density are skewed to lessen the increment of new trips from the rezone action. Under the existing zoning, a density value of 31 employees per acre used, however for the future zone case it was scaled back to a more typical density for this type of use (typically 4 employees per 1,000 square feet floor space). To be comparable, the same density assumptions should be applied for the medical office uses, and the trip generation for that 5-acre piece should be identical in both existing and future cases. Having accurate trip generation for the existing zoning is critical to the study considering the applicant's traffic engineer has recommended improvements that only mitigate back to the existing zoning rather than meeting the operating standards. If the medical office portion of the site is held constant, the net increase in trips would be 100 weekday PM peak hour trips higher than reported.

The commercial square footage has been reduced to 290,000 square feet as compared to the prior PacTrust study which showed 350,000 square feet. The proposed zoning would allow in excess of 290,000 square feet as assumed in the traffic study. A conditional zone change would be needed to assure that the square footage as assumed in the traffic study does not exceed the development levels assumed in the traffic study.

Proposed Access to Kuebler Boulevard

The applicant's traffic engineer stated that it was assumed that the proposed site would have two project access points to the public street system via one access to Boone Road and the other to 27th Avenue. But it states in the report that a third access to Kuebler Boulevard would be needed to better service the site under the proposed zoning scenario and to reduce traffic on Boone Road. Kuebler Boulevard is classified as a Parkway in the City's Transportation System Plan (TSP) which has the primary function of being a high speed high capacity roadway[2]. The TSP states that a Parkway should have limited access for selected Arterial and Collector streets. City of Salem access spacing standards for a Parkway is limited to one-mile intervals for Arterial and Collector roadways[3]. The access criteria states that private development may only be granted access to a Parkway until such time as a permanent access from another facility can be established.

Today, the Battlecreek Road (classified as a minor arterial) and 27th Street SE (classified as a collector) intersections are spaced approximately 2,000 feet apart on Kuebler Boulevard. This distance

[2] City of Salem TSP, March 2005, Street System Element, Table 11.
[3] Development Bulletin, City of Salem, January 12, 2000, p. 1.

is less than the one-mile space recommended (one mile = 5,260 feet) but the classifications of these public streets are consistent with the permitted intersections. These intersections likely existed prior to the Parkway designation of Kuebler Boulevard.

The PacTrust private access to Kuebler Boulevard is proposed midway between the existing Battlecreek Road and 27th Street SE intersection that would provide approximately 1,000 feet of spacing between intersections, less than 20% of the distance required by the City. Because the site has the potential for access to both Boone Road and 27th Avenue the proposed Kuebler Boulevard private access does not meet the City's access spacing standard.

Furthermore, the third access to Kuebler Boulevard would not be necessary to provide adequate access to the PacTrust site if the proposed development were consistent with the existing zoning. The applicant's traffic study showed that the proposed zoning would generate nearly three times the project traffic at the access points during the PM peak period which is the critical analysis time. The trip generation for existing and proposed zoning is summarized for the project access points in Table 2.

Table 2: PacTrust Project Access Trip Generation Comparison for Existing and Proposed Zoning

Time Period	PM Peak Hour Trips	Weekend Mid-Day Trips
Existing Zoning	515	450
Proposed Zoning	1,500	2,025
Percent Change	+290%	+450%

Queuing Analysis

The PacTrust study provides queuing analysis for the 2007 Saturday mid-day and weekday PM peak hours but does not provide queuing analysis for the future 2025 scenario. Future 2025 queuing (with and without the proposed Kuebler access) analysis should be conducted to determine long term impacts from the proposed zone change, consistent with the TSP horizon year. If queues are found to impact down stream intersections, safety related mitigations should be identified that would mitigate back to the existing zoning. This request is consistent with an earlier request from ODOT[4].

Battle Creek Road Operations

The applicant's traffic study recommends a new traffic signal at the Battle Creek Road/Boone Road intersection. This proposed traffic signal would be located approximately 500 feet south of the existing traffic signal at the Kuebler Boulevard/Battle Creek Road intersection. Having closely spaced traffic signals may make it difficult to coordinate and provide adequate vehicle storage based on the estimated traffic volumes. Today, Battle Creek Road carries about 5,600 vehicles per day[5] south of Kuebler Boulevard and 6,400 vehicles per day north of Kuebler Boulevard during a typical weekday. In 2025, the PacTrust traffic study estimates that the daily traffic volumes will more than double to 12,300 vehicles per day south of Kuebler Boulevard and 14,350 vehicles per day north of Kuebler Boulevard (the proposed PacTrust development would add 3,800 vehicles per day to Battle Creek Road south of Kuebler Boulevard).

The 2007 queuing analysis provided in the PacTrust traffic study for both the 2007 Saturday mid-day and weekday PM peak hours showed that the projected 95th percentile queues for the northbound left turn on Battle Creek Road at Kuebler Boulevard the southbound left turn on Battle Creek Road would exceed the 500 feet of available storage. The 2025 queuing (to be determined) would require

[4] Letter from Steven Wilson, ODOT Region 2, July 20, 2006, page 4.
[5] The existing daily traffic volumes for Battle Creek Road was estimated from multiplying the PM peak hour existing traffic volumes from the PacTrust TIA by 10.

significantly more storage between these traffic signals. Additional traffic analysis should be provided by the applicant to determine if these closely spaced traffic signals will work for both the 2007 and 2025 weekday PM peak hour and Saturday peak hour. It is clear from the 2007 analysis that side by side northbound and southbound left turn lanes (maybe dual left turn lanes would be needed for 2025) would be needed to provide adequate storage. This number of travel lanes would have a significant impact on the adjacent properties (5 to 6 lane cross section) north and south of Boone Road. A schematic drawing of Battlecreek Road should be provided that shows the proposed mitigated lane configuration for the 2025 queuing scenario between Kuebler Boulevard and Boone Road. If adequate storage is not provided, peak hour queuing could impact Kuebler Boulevard and the adjacent neighborhood areas north and south of Kuebler Boulevard.

Neighborhood Impacts

The PacTrust traffic study analysis showed that Kuebler Boulevard will be significantly over capacity by the year 2025. When major facilities such as Kuebler Boulevard approach capacity, traffic is encouraged to divert to alternative roadways in search of a perceived savings in travel time. Roadways such as Stroh Lane, Boone Road and Barnes Road would likely see an increase in diverted traffic. Livability impacts should be addressed by the applicant as to how the proposed zone change would increase traffic volumes in surrounding neighborhoods.

Project Mitigation

Improvements were recommended in the PacTrust traffic study to mitigate the estimated incremental impacts from the proposed zone change. Of the six intersections that required mitigations, two of the six mitigations included retiming the traffic signals, as summarized in Table 10 on page 42. Traffic signals could be retimed by City and ODOT staff to improve the operations in the future whether or not the proposed zone change were approved. Additional mitigations beyond retiming the traffic signals should be identified that mitigate the impacts from the zone change.

Furthermore, the v/c ratio results shown in Table 10 for 2025 are significantly over capacity. In one case, at Kuebler / 36th Avenue, the forecasted volumes are more than two times the planned capacity (v/c > 2.0). Suggesting signal timing to resolve impacts at such a location is not meaningful. Pragmatic applications of this results shows that anything above 1.20 is just theoretical, since the actual conditions predicted beyond that range cannot be realized. Travelers would not tolerate such excessive delays, and choose other routes, or other means to make the trips. This is further indication that a broader system level mitigation would be required to resolve such excessive shortcomings in the transportation system. It is a far greater issue than can be dealt with from simple timing tweaks.

Conclusions & Recommendations

We recommend that additional information be provided by the applicant in order to assess all impacts from the proposed PacTrust zone change. The additional information is summarized as follows:

- Updated traffic counts should be conducted to assure that the traffic counts from July of 2005 are not significantly lower than the current traffic levels. If the current levels are higher (greater than 1% to 2%), the applicants traffic analysis should be revised.
- If a conditional zone change is not proposed by the applicant, the traffic study should be revised with a worst case retail square footage that could be built under the proposed zoning (the original TIA assumed 374,000 square feet).
- Queuing analysis for the 2025 scenario should be provided by the applicant to ensure safety related problems are addressed. Additional mitigations should be recommended for 2025 queuing impacts that are caused by the proposed zone change.
- Additional traffic analysis is necessary to determine the operational impacts to Battle Creek Road between Boone Road and Kuebler Boulevard with the addition of the proposed traffic signal at Battle Creek Road and Boone Road. The 2007 analysis showed the need for side by

side left turn lanes. The future 2025 may require additional mitigations above and beyond the side by side left turn lanes.

- Livability impacts should be address for diverted traffic to surrounding neighborhood streets.

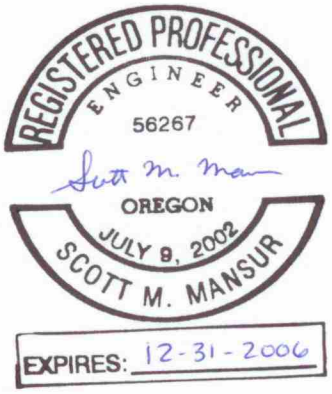
Feel free to give me a call if you have any questions or comments.

Sincerely,

***DKS** Associates*
A Corporation

Scott M. Mansur

Scott Mansur, P.E.
Transportation Engineer



CC: Judith Moore, City of Salem
Eric Destival, City of Salem
Steven Wilson, ODOT

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October 25, 2006

Via Fax (503)986-2839
and First Class Mail
Steve Wilson
Regent Two Senior Traffic Analyst
555 Liberty Street SE
Salem, OR 97301

Via Fax (503) 588-6025
And First Class Mail
Eric Destival
City of Salem
555 Liberty Street SE
Salem, OR 97301-3513

Re: Comprehensive Plan Zone Change 06-6 (Pacific Realty Associates)

Dear Mr. Wilson and Mr. Destival:

As you may know, I represent property owners surrounding the 18 acre site proposed for a zone change in the above referenced application. It is my understanding a meeting is scheduled for tomorrow, October 26, 2006, to review the third revision to the TIA submitted by the applicant in support of the request for a comprehensive plan amendment, and zone change. It is my understanding the purpose of the meeting is to discuss potential mitigation measures.

Because the reliability of the TIA will directly impact the required mitigation measures, I write to address what appear to be fundamental problems with the TIA. As is set forth below, the traffic counts on which the study is based are out dated, and were taken at a time of year when traffic in the area was artificially reduced because the four schools in the area were not in session. If updated counts taken when the schools are in session are not obtained to correct the deficiencies, none of the involved agencies or parties can proceed with any confidence.

It is my hope that by addressing some of the flaws within the TIA now, they can be addressed before unnecessary resources are expended generating conclusions based on outdated and flawed data. The fundamental problems I discuss below appear to be the result of a result oriented approach to the TIA, in which the integrity of the data and analysis are sacrificed in pursuit of the desired result.

First, the traffic counts on which the traffic impact analysis are based are outdated, and were taken in July of 2005 when school was out, so they do not accurately reflect true traffic volumes in the area. Pac Trust bases its application largely on the assumption significant

residential development is taking place in the area. Accordingly, traffic counts which are well over a year old not only fail to meet the ODOT requirements for best practices, but do not accurately reflect current conditions. Further, there are at least four schools to which Battlecreek Road provides the primary access through the study area. By taking traffic counts in July of 2005, traffic associated with those schools is not accounted for.

ODOT's manual for best practices for traffic impact studies specifically provides traffic counts should be no more than one year old from the date the report is prepared. The provision reads:

> "Traffic counts-traffic counts shall be no more than one year old from the date the report is prepared. Counts between one and three years old must be factored to the current year. If the proposed project is located in a high growth area, the collection of new traffic counts is recommend." *ODOT Best Practices for Traffic Impact Studies, page 8.*

In this case, the report prepared and submitted to the City in support of the project is dated in September, 2006. The counts on which it relies were taken in July, 2005. Accordingly, by ODOT's standards, the reports are stale.

The fact the report is a revision of a prior report does not change this result. The initial report sought to justify 350,000 square feet of commercial space and 24,000 square feet of office space. All of its conclusions and analysis were based on trip generation estimates for a project of this size.

The current report addresses 290,000 feet of commercial space and 24,000 feet of office space. All of its projections and conclusions are based on the new reduced scale. In other words, it is a new report for a new proposal with a revised, but still significant scale. Because the report was rewritten to address a new scale of project, appropriate data collected within ODOT specified guidelines should be used. It was not.

In fact, it is standard practice in the traffic engineering industry to obtain new counts, when a report is revised at a time when the original counts have become stale. There is no reason the standard practice should not be followed in this case. The applicant threw out the original 350,000 square foot proposal, when it did, it threw out the relevance of its outdated artificially low summer traffic counts.

Further, the requirement to prepare the study in accordance with ODOT's standards should be no surprise to the applicant. A review of the Preapplication materials submitted in this matter demonstrate all parties were aware the ODOT's standards should be complied with in preparation of the study. Any doubt was certainly erased by ODOT's July, 2006 review of the

TIA.

The need for current traffic counts is reinforced by PacTrust's own submission materials. Their application is based largely on the assumption substantial residential growth is taking place in the area, which requires additional commercial facilities to support it. If that growth is taking place, accurate counts should be taken now, so that accurate information is used to evaluate the significant traffic impact all parties agree the proposal will generate. Absent counts performed within a year of the submission, the study fails to meet ODOT's standards, and does not provide a basis for the City to evaluate the application.

Taking the traffic counts in July demonstrates another fundamental flaw with the raw data on which the conclusions and analysis are based. Pringle Elementary School, Lee Elementary School, Leslie Middle School and Abiqua School, are all accessed off of Battlecreek Road, through the study area. Together they serve approximately 1800 students. By taking counts in July, the significant additional traffic created by teachers, parents, custodians, administrators, and other specialists traveling to and from the schools is not accounted for. I can testify from personal experience traffic in the area is significantly less during the summer months. When school is in session, lines at lights are longer, traffic moves more slowly, and substantial additional time is required to travel the same distance, than in summer when school is out.

The outdated nature of the counts, and the fact they were taken at a time that does not accurately reflect actual traffic in the area, demonstrates the raw data on which the analysis is based is fundamentally flawed. As such, all conclusions flowing from that analysis are fundamentally flawed as well.

Accordingly, if the study is to be used, current counts, taken while schools are in session must be obtained. Without such counts, the report can not and will not, accurately reflect the traffic impact to one of south Salem's most important road ways.

Further, as ODOT noted in its July 20, 2006 memorandum, only 2 hour AM/PM peak counts were used to address signal warrants. In response ODOT noted, MUTCD requires at least 12 consecutive hours worth of data to perform adequate warrant analysis for signals. Thus, pursuant to ODOT's memorandum, signal warrants can't be addressed as the report does not provide sufficient information on which to evaluate the need.

Property owners in the area deserve to have the application evaluated on up to date, fully informed information. This is particularly true, given the fact both the first and second revisions to the traffic study demonstrate is was scoped and performed to achieve the desired result.

The result oriented nature of the study is first demonstrated by the proposed scope. Preapplication materials and comments demonstrate the City of Salem's Transportation System Plan, and City of Salem Public Works have repeatedly indicated no direct access onto Kuebler Boulevard will be allowed on the site. The staff's comments were founded upon, and reinforced

by Kuebler Boulevard's classification as a parkway.

The City of Salem's description of parkways specifically dictates access points are to be limited to intersects with selected arterial and collector streets. Both the original traffic study submitted, and the revised traffic study, conclude that proposed accesses to the site will not function at acceptable levels, unless a driveway onto Kuebler Boulevard is provided.

Although carefully crafted wording is used in the traffic impact analysis, the statement remains the same. If access is not provided onto Kuebler Boulevard, the size and scope of the project are such resulting traffic in the area will not function at acceptable levels.

It is essential to note, the failure to function at acceptable levels without a driveway onto Kuebler Boulevard is demonstrated even without accurate traffic counts taking into account the significant impact on traffic in the area created by the additional traffic associated with travel to and from the four schools in the area.

This point is driven home by the substantial reduction in scale proposed between the original traffic study, and the revised September, 2006 version. The original traffic study proposed a structure of 350,000 square feet of commercial and 24,000 square feet of medical office. The revised traffic study proposes 290,000 square feet of retail space and 24,000 square feet of medical office. Thus, despite a reduction of nearly 20% of the size of the project, the proposed accesses to the site still function at unacceptable levels unless a driveway is attached to Kuebler Boulevard.

The two reports, each used to justify substantially different size projects are based on the same data. The only difference was the first study was performed without ODOT's input.

ODOT's input was not obtained despite the fact all parties agreed ODOT's standards should be applied to the traffic impact analysis as much as possible in the preapplication conference. When ODOT's comments were obtained, a revised TIA was provided which reduced the size of the structure by some 60,000 square feet.

Further, questions regarding the manner in which the TIA were performed are raised by ODOT's July 20, 2006 memorandum reviewing the TIA. The memorandum points out multiple inconsistencies within the report. Again, in a report prepared to provide detailed and accurate information to assess the project's true impact, one would not expect the report not be internally inconsistent.

Presumably at least some internal inconsistencies, or inaccuracies were perpetuated in the revision, as a third revision was required. I have not been provided a copy of that revision yet, so its impossible for me to comment on the second set of changes required. Given the first TIA proposed a structure so large it can't be justified under the terms of the second report, and the second report still concludes the proposed structure must have a driveway specifically prohibited

by the Salem's TSP in order to obtain acceptable level of service, it appears the reports is prepared not to assess impact and propose mitigation, but to achieve a preordained result. Accordingly, the information on which it is based, and its conclusions warrant careful scrutiny.

In summary, even a brief review of the TIA demonstrates significant fundamental flaws making it unreliable. The initial TIA argued a 350,000 square foot commercial center, together with 24,000 feet of medical office space was justified on the site. When the flaws, defects, and inconsistencies in the TIA were identified by ODOT, the traffic impact analysis was revised to reflect only 290,000 square feet of commercial space can be accommodated on the site.

Two different conclusions, drawn from the same out dated and artificially low traffic counts. Current traffic counts reflecting real world conditions must be obtained, and used or significant effort will be expended based on data which does not comply with ODOT's standards or standard practice in the industry.

At the very least, the repeated inaccuracies, and inconsistencies, which required two revisions to the TIA, demonstrate, at the very least the report must be carefully reviewed and analyzed to determine whether it is reliable. Should it be concluded the report is reliable, appropriate explanations must be provided regarding the use of outdated traffic counts, and traffic counts which are too short to qualify for signal warrant analysis.

For the City to fairly and accurately evaluate the application, it must have accurate information taken during appropriate peak periods, while school is in session. Absent such information, the traffic impact analysis is not reliable and must be disregarded.

Thank you for your consideration and attention to this matter.

Yours truly,

SHERMAN, SHERMAN, JOHNNIE & HOYT, LLP

Mark C. Hoyt
mark@shermlaw.com

MCH:ljb
cc: Daniel Fricke via fax 503-986-2630
Judith Ingram Moore via fax (503) 588-6005
City of Salem
Client

From: Eric Destival [EDestival@cityofsalem.net]
Sent: Wednesday, August 09, 2006 2:23 PM
To: Dave Daly; Stephen.B.Wilson@odot.state.or.us
Cc: Kevin Hottmann; smm@dkspdx.com; Anthony Yi; daniel.l.fricke@odot.state.or.us; David.WARREN@odot.state.or.us
Subject: Re: FW: PacTrust Kuebler Project - Refined Future TrafficVolumes

Dave,
Both Scott with DKS and myself are OK with the refined traffic forecasts for 2025 with Eagles Crest. You may proceed. The other question you had was about the base saturation flow rate assumption.
The city is OK with using the 1900 vph rate from the HCM (p16-10 in HCM 2000). This is commonly used in other studies in the city. For ODOT intersections please check with Steve Wilson. He will be back on Monday. Thanks.

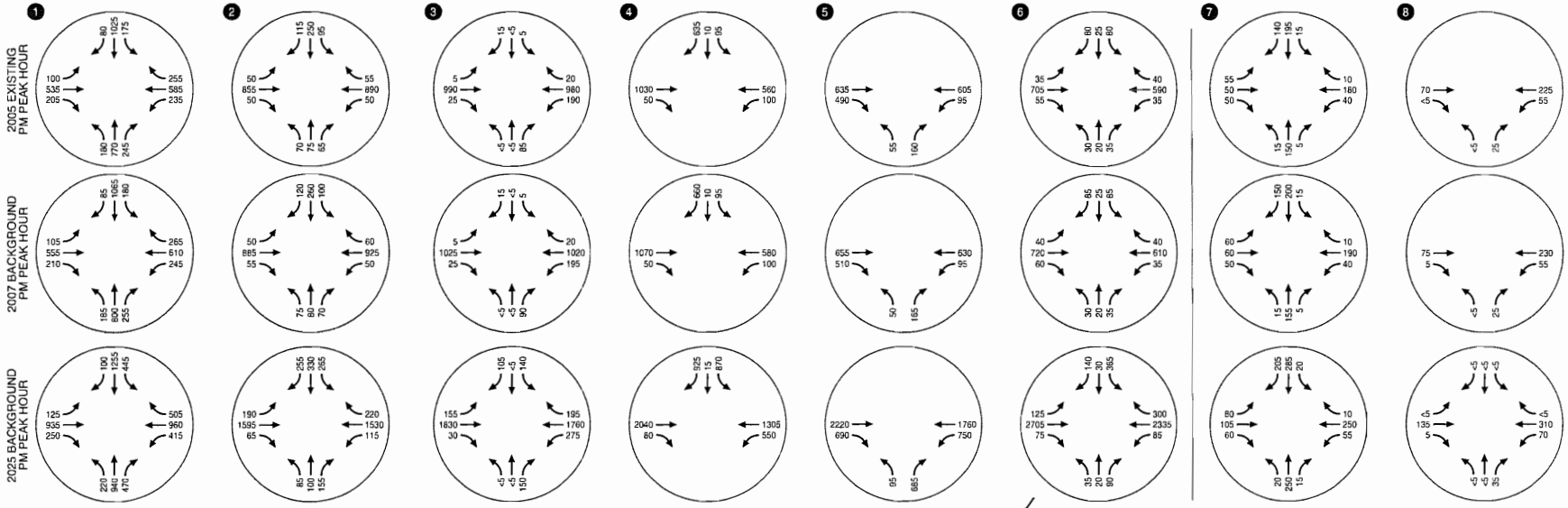
Also,
I would like the Synchro input for the study intersections. It is fine to send the input from the prior submission right now. I want to verify turn lane lengths and other input assumptions. Thanks much!

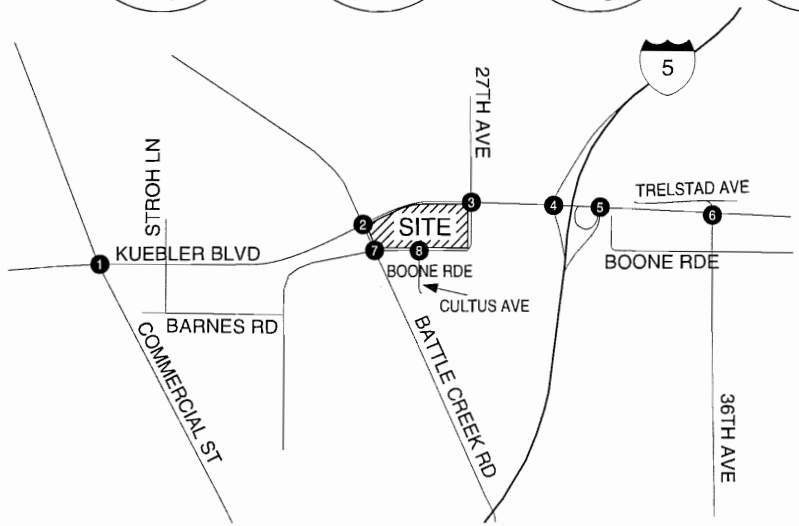
Eric Destival, P.E.
Assistant City Traffic Engineer
City of Salem Public Works
phone 503-588-6211
fax 503-588-6025

>>> "Dave Daly" <ddaly@kittelson.com> 08/08/06 5:42 PM >>>
Hi Steve,
This is a copy of the email that I sent to Eric Destival at the City of Salem regarding our refined forecast traffic volumes for the PacTrust Kuebler Project. If you have any questions please feel free to give us a call. The traffic volumes are in the attached figure.

Thanks,
Dave Daly

> _____
> From: Dave Daly
> Sent: Tuesday, August 08, 2006 1:51 PM
> To: 'Eric Destival'
> Cc: 'khottmann@cityofsalem.net'; Anthony Yi; 'Jeffrey R. Tross';
> 'Dick Loffelmacher'; 'EricS@pactrustlp.com'
> Subject: PacTrust Kuebler Project - Refined Future Traffic
> Volumes
>
> Hi Eric,
>
> As requested, please find attached a figure showing our refined
> forecast year 2025 background traffic volumes. The 2025 volumes
> include the proposed Eagles Nest development. We formally request
> that the City of Salem provide written confirmation regarding the
> forecast traffic volumes as soon as possible so that we can proceed
> with our analysis. Please let us know if you have any questions
> regarding these volumes.
>
> Thanks,
> Dave Daly
>
> <<7460figs_synchro_tia update Figure for City.pdf>>
>





PRELIMINARY (08/08/06)

FORECAST TRAFFIC VOLUMES
WEEKDAY PM PEAK HOUR
SALEM, OREGON

FIGURE 1

Kittelson & Associates, Inc.
Transportation Engineering / Planning

H:\projfile\7460 - Kuebler Retail Center\dwgs\figs\TIA Update Aug 2006\7460figs_synchro_tia update.dwg Aug 08, 2006 - 11:51am - ddaly Layout Tab: Figure for City

Table 1
Estimated Trip Generation – Scenario 1

Land Use	ITE Code	Size	Daily Trips	Weekday PM Peak Hour Trips			Saturday Midday Peak Hour Trips		
				Total	In	Out	Total	In	Out
Existing Zoning									
Medical-Dental Office Building	720	310 Employees	2,750	325	110	215	270	155	115
Single-Family Detached Housing	210	190 Units	1,825	190	120	70	180	100	80
Total Net New Trips			**4,575**	**515**	**230**	**285**	**450**	**255**	**195**
Proposed Zoning									
Shopping Center	820	290,000 Sq ft.	13,570	1,260	685	745	1,730	900	830
Pass-by Trips (34% Weekday,26% Saturday)			*(4,610)*	*(430)*	*(215)*	*(215)*	*(450)*	*(225)*	*(225)*
Medical Dental Office Building	720	70 Employees	625	75	25	50	60	35	25
Internal Trips (20%)			*(125)*	15	5	10	10	5	5
Total Site Generated Trips			14,235	1,350	630	720	1,815	950	865
- Internal Trips			*(125)*	*(15)*	*(5)*	*(10)*	*(10)*	*(5)*	*(5)*
- Pass-by Trips			*(4,610)*	*(430)*	*(215)*	*(215)*	*(450)*	*(225)*	*(225)*
Total Net New Trips			**9,500**	**905**	**410**	**495**	**1,355**	**720**	**635**
Difference (Proposed – Existing)			**4,925**	**390**	**180**	**210**	**905**	**465**	**440**

Table 2
Estimated Trip Generation – Scenario 2

Land Use	ITE Code	Size	Daily Trips	Weekday PM Peak Hour Trips			Saturday Midday Peak Hour Trips		
				Total	In	Out	Total	In	Out
Existing Zoning									
Medical-Dental Office Building	720	108,900 Sq ft.	3,935	340	90	250	395	225	170
Single-Family Detached Housing	210	190 Units	1,825	190	120	70	180	100	80
Total Net New Trips			**5,760**	**530**	**210**	**320**	**575**	**325**	**250**
Proposed Zoning									
Shopping Center	820	290,000 Sq ft.	13,570	1,260	685	745	1,730	900	830
Pass-by Trips (34% Weekday,26% Saturday)			*(4,610)*	*(430)*	*(215)*	*(215)*	*(450)*	*(225)*	*(225)*
Medical Dental Office Building	720	24,000 Sq ft.	870	90	25	65	85	50	35
Internal Trips (20%)			*(170)*	*(20)*	*(5)*	*(15)*	*(15)*	*(10)*	*(5)*
Total Site Generated Trips			14,440	1,350	630	720	1,815	950	865
- Internal Trips			*(170)*	*(20)*	*(5)*	*(15)*	*(15)*	*(10)*	*(5)*
- Pass-by Trips			*(4,610)*	*(430)*	*(215)*	*(215)*	*(450)*	*(225)*	*(225)*
Total Net New Trips			**9,660**	**900**	**410**	**490**	**1,350**	**715**	**635**
Difference (Proposed – Existing)			**3,900**	**370**	**200**	**170**	**775**	**390**	**385**

Land Use	ITE Code	Size	Daily Trips	Weekday PM Peak Hour Trips			Saturday Midday Peak Hour Trips		
				Total	In	Out	Total	In	Out
September 2006 TIA			**5,085**	**385**	**180**	**205**	**900**	**460**	**440**
Employees			**4,925**	**390**	**180**	**210**	**905**	**465**	**440**
Building SF			**3,900**	**370**	**200**	**170**	**775**	**390**	**385**

February 7, 2000

TO: All Holders of the City of Salem Design Standards

EFFECTIVE DATE: March 1, 2000

SUBJECT: **DEVELOPMENT BULLETIN #34**

The following information is distributed as a public service to the Salem development community of engineers, architects, contractors, builders, and developers to make them aware of any changes in the City permit and plan approval process, design standards, or construction standards which may have an impact on their operations:

DESIGN STANDARDS FOR ACCESS MANAGEMENT ON COLLECTORS, ARTERIALS, AND PARKWAYS

PURPOSE: NOTICE OF CHANGE TO DESIGN STANDARDS

As Salem's transportation system grows and becomes more heavily utilized, it is essential to apply a uniform appropriate standard for access on major links. The access management increases safety and capacity of Salem streets.

The standards were developed by our Transportation Engineers and are defined in the attached memo dated January 12, 2000. They were built on the basis of requirements specified in the Appendix of the 1992 Salem Transportation Plan and the Access Management Objectives found in the 1998 Salem Transportation System Plan.

These standards will be applied to projects submitted for approval on or after March 1, 2000.

Please place this bulletin in your "Salem Department of Public Works Design Standards."

For more information, please contact the Public Works Department Permit Application Center at (503) 588-6211 or (503) 588-6292 (TTY).

Robert Reitmajer, PE
Chief Development Services Engineer

RR:LEK:P:\BULLETIN\DEVBUL34.WPD
Enclosures:
1. Memo
2. Index to Development Bulletins

PUBLIC WORKS

CITY OF Salem AT YOUR SERVICE

TO: Tim Gerling, Assistant Director
Department of Public Works

THRU: Peter Fernandez, Transportation Services Manager
Department of Public Works

FROM: Lew Garrison, City Traffic Engineer
Department of Public Works

DATE: January 11, 2000

SUBJECT: DEVELOPMENT BULLETIN

We need a Development Bulletin issued to provide documentation for access management requirements to be enacted for development, new or otherwise along the Arterial and Collector street system. Since we do not have the opportunity at this time to develop more thorough criteria, we propose, in the interim, to use as a basis the requirements specified in the Appendix of our 1992 Salem Transportation Plan and the Access Management Objectives found in the Transportation System Management Element of the 1998 Salem Transportation System Plan. Some modifications to those standards have been made.

These standards will apply for the following classification of streets:

PARKWAY

Access
Access spacing along Parkways shall be limited to one-mile intervals for Arterial or Collector street intersections and /or major intersections. A spacing of less than one-mile will only be granted on approval of the Public Works Director. Temporary access for private development may be granted until such time as permanent access from another facility can be established.

Permitted Access Uses
Uses permitted direct access are limited to major public and /or private developments generating traffic volumes of 10,000 or more vehicles per day.

MAJOR and MINOR ARTERIALS

Access
Access spacing between access points (street or private driveway) shall be a minimum of 370 feet centerline to centerline.

Permitted Access Uses
Uses permitted direct access are limited to public or private development generating 100 or more trips per day and community or urban parks.

Uses Prohibited Access
Uses prohibited direct access include single family and duplex residential, elementary and middle schools, and neighborhood parks.

COLLECTOR

Access
Access spacing is limited to corner separation from Collector or Arterial street intersections. At the corner of these intersections, a minimum spacing of 200 feet centerline to centerline (street to driveway) shall be maintained. If alternate access is available to a local street, access to the Collector will not be allowed.

Permitted Access Uses
No restrictions.

Uses Prohibited Access
None.

SPECIAL ACCESS CONSIDERATIONS FOR ALL ARTERIAL AND COLLECTOR STREETS

1. Where pre-existing patterns of land ownership preclude the application of the foregoing standards for Arterial or Collector streets, the following provisions shall apply:

   In locations where the minimum separation cannot be achieved, a shared access plan shall be adopted and implemented as follows:

   a) The shared access plan shall link parcels not permitted direct access under these standards to a permanent access point across adjoining parcels using a private drive, private street, or public street.

   b) Private drives shall be established with permanent irrevocable easements.

   c) Parcels that develop prior to the completion of a permanent shared access shall be permitted temporary Arterial access, if no other access is available, until the permanent access system is built.

   d) Parcels not designated for direct Arterial access will share a common temporary access until completion of the permanent access system.

2. Corner properties or corner properties without sufficient street frontage to maintain the access spacing as specified herein shall access the abutting side street of lower classification and provide the maximum corner separation possible or the minimum specified.

3. Any one development along the Arterial street system shall be considered in its entirety, regardless of the number of individual parcels it contains. Individual driveways will not be considered for each parcel.

4. Access to the Arterial street system shall be primarily limited to one point, provided adequate street frontage is available. Additional access may be permitted, provided adequate frontage and access spacing is available.

5. Signalized access for private streets and driveways onto the Arterial or Collector street system shall not be permitted within 1,320 feet of any existing or planned signal.

6. The spacing of access points shall be determined based on street classification. Generally, access spacing includes accesses along the same side of the street or on the opposite side of the street. Access points shall be located directly across from existing or future access, provided adequate spacing results.

7. All access to the public right-of way shall be located, designed, and constructed to the approval of the Public Works Director or his designee. Likewise, variances to these access management standards shall be granted at the discretion of the Public Works Director or his designee.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: December 4, 2006 **Project** #: 7460.03

To: Planning Commission

From: Anthony Yi, P.E. & Mark Vandehey, P.E.

Cc: Eric Destival, City of Salem
Kevin Hottman, City of Salem
Dan Fricke, ODOT
Steve Wilson, ODOT

Project: PacTrust Kuebler Project

Subject: Response to Public Comments from the November 21st Public Hearing

This memorandum responds to public comments provided at the November 21, 2006 Public Hearing as it relates to ***traffic counts*** and ***vehicle queuing***. The remainder of this memorandum summarizes opponents' comments in *italics* and provides our response in standard text.

Traffic Counts

The traffic counts used in the September 2006 TIA are over 12 months old, fail to meet the ODOT requirements for best practices, were collected in the summer when traffic volumes are typically lower, and were taken at a time of year when schools are not in sessions.

Response #1: The traffic volumes used in the September 2006 TIA were determined using accepted engineering principles for collecting and analyzing this data. Evidence that the counts were properly collected and analyzed is that the traffic counts were accepted and approved by both City of Salem and ODOT staff. In addition, an e-mail from the City of Salem, dated August 9, 2006, states that both the City and DKS Associates confirmed the use of the refined traffic forecasts as appropriate (Appendix "E" of the *November 14, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA* contains the e-mail correspondence).

The dates on which the manual turning movement counts were collected (summer of July 2005) are consistent with accepted engineering principles and the requirements of the ODOT Analysis Procedures Manual (APM) dated April 2006 (page 3-8). Also, as stated in the APM:

> For most projects, the 30HV should be used to represent design volumes. In fully developed portions of Metropolitan Planning Organization (MPO) areas, the 30th highest hour is generally assumed to be represented by the weekday peak hour. Where 30HV will be used in analysis, the counts should be taken as close to the 30th highest hour as possible. This typically requires collecting counts on a

> weekday afternoon (usually in summer) in most larger urban areas, but may include weekends for high recreation areas (the coast), or areas experiencing lunch hour peaks or high reverse direction flows during the day. (APM, page 3-4)

Volumes in the September 2006 TIA were collected and evaluated as explained above and the design volumes used were based on the 30HV. Furthermore, the APM recommends that seasonal factors be applied to manual traffic counts to obtain 30th highest hour volumes (30HV) and that one approach is to use seasonal factors developed from local automatic traffic recorders (ATRs) to convert manual traffic counts to 30HV (APM, page 2-7). The closest ATRs are located along ORE 22 (Willamina-Salem Highway 30, recorder 24-004 and 24-014) on both sides of I-5. A review of available data provided by the ODOT Traffic Counting Program reveals that July represents peak seasonal traffic conditions based on average daily traffic collected in 2005.

Also, although many schools are not in session during the summer months, the traffic analysis analyzed peak time periods when schools are not typically in operation or their traffic flows are not at their peaks (weekday p.m. peak hour and Saturday midday peak hour).

The following timeline provides a summary of key milestones related to the collection and approval of traffic volumes used in the September 2006 TIA. The timeline also covers the coordination effort with City of Salem and ODOT staff that ultimately concluded with approvals by both reviewing agencies.

Timeline	Key Milestones
July 2005	Obtain traffic counts.
August 10, 2005	Meeting with the City of Salem to discuss project background, preliminary findings, and scheduling.
September 22, 2005	Meeting with the City of Salem to discuss project background, preliminary findings, and scheduling.
October 17, 2005	Submittal of the *Preliminary Traffic Assessment* memorandum.
October 20, 2005	Pre-Application meeting at the City of Salem.
November 14, 2005	Meeting with City of Salem staff to discuss the TIA scope of work (*Preliminary Traffic Assessment* memorandum).
April 2006	Submittal of the April 2006 Traffic Impact Analysis (TIA).
July 13, 2006	Meeting with City of Salem staff to discuss comments regarding the April 2006 TIA. City comments included revising the April 2006 TIA to specifically include traffic generated by the proposed Eagle Nest Development.
August 2, 2006	City of Salem forwards an e-mail dated August 1, 2006 prepared by DKS Associates that contains estimated traffic volumes for the proposed Eagles Nest Development.
August 8, 2006	Submittal of traffic volumes figure to City of Salem and ODOT and a request for written confirmation of the forecast traffic volumes.
August 9, 2006	E-mail response from the City of Salem stating both the City and DKS Associates confirm the use of the refined traffic forecasts as appropriate.
August 17, 2006	Meeting with City of Salem and ODOT staff to discuss comments regarding the April 2006 TIA.
September 29, 2006	Submittal of the revised September 2006 TIA and a meeting with ODOT and City of Salem to present findings.

October 26, 2006	Meeting with City of Salem and ODOT staff to discuss comments regarding the September 2006 TIA.
November 13, 2006	City of Salem comment letter stating the September 2006 TIA is accepted and approved.
November 14, 2006	ODOT comment letter stating the September 2006 TIA is accepted and approved.

Queuing Analysis

The PacTrust study provides queuing analysis for the 2007 Saturday mid-day and weekday PM peak hours but does not provide queuing analysis for the future 2025 scenario.

Response #2: As previously stated in the *November 14, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA* (pages 9 and 13), a design concept was developed that can accommodate vehicle queues under build-out conditions, while maintaining acceptable intersection operations under proposed zoning year 2007 total traffic conditions and avoids further degradation of all study intersections under year 2025 traffic conditions. This is without the proposed right-in only driveway on Kuebler Boulevard. With or without the proposed right in only driveway, those improvements proposed by the Applicant will help alleviate congestion in the study area for year 2007 total traffic to a level that is a net improvement in operations relative to the existing zoning.

*As identified in the September 2006 TIA, a*ll signalized intersections along Kuebler Boulevard as well as the Battle Creek Road/Boone Road intersection are forecast to operate well over capacity and at LOS "F" under 2025 peak hour conditions, **regardless of the zoning of the subject property**. A queuing analysis will not provide any reliable distinguishing information between the existing and proposed zoning scenarios under this situation. This is because queuing characteristics are very sensitive to factors such as vehicle arrival patterns and detailed settings within the signal controller, neither of which can be accurately predicted 20 years hence for a series of oversaturated signalized intersections. Therefore, our traffic operations analysis of 2025 conditions focuses on overall intersection operations and mitigation measures to avoid further degradation.

Conclusion

We trust this memorandum provides adequate documentation to respond to public comments provided at the November 21, 2006 Public Hearing as it relates to traffic counts and vehicle queuing. This memorandum also supplements the *September 2006 TIA* and *November 14, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA*. If you have any further questions, please call us at (503) 228-5230.

KAI FIRM BACKGROUND

Kittelson & Associates, Inc. provides transportation planning, engineering and research services to government and private organizations. We recognize that the goals of efficient, economic, and safe transportation depend on more effectively managing, operating, and enhancing transportation facilities. Thus, the purpose of each project is to contribute to better transportation by systematically developing and applying methods for improving the performance of highway and transit systems. Founded in 1985, the company currently employs a staff of over 110 people working in offices in Baltimore, Maryland; Boise, Idaho; Fort Lauderdale and Orlando, Florida; Phoenix and Tucson, Arizona; and Portland, Oregon.

The firm provides a wide scope of services that span the many facets of transportation including:

TRANSPORTATION PLANNING: Developing long-range multi-modal transportation systems plans at a regional, corridor, and sub-area level. Developing transportation policies dealing with issues such as growth management, access management, parking, and transportation financing. Conducting area-wide parking studies. Conducting transportation analyses for environmental impact studies.

FUNCTIONAL DESIGN: Developing and evaluating scaled design alternatives for collectors, arterials, freeway systems, and interchanges, taking into account geometric, operational, and performance related issues.

TRAFFIC OPERATIONS: Developing and implementing traffic engineering solutions to systematically improve the quality and/or safety of traffic flow within both urban/suburban and rural transportation systems. Range of services provided include site specific traffic engineering and impact studies, traffic signal timing of arterials and networks, and analysis of advanced traffic control systems.

TRAFFIC ENGINEERING DESIGN: Provide design services for traffic operational improvements including preparing plans and specifications for traffic signal installations, street lighting, signing, pavement marking, and channelization improvements. Services also include preparing temporary protection and traffic control during construction.

RESEARCH & EDUCATION: Conducting applied research under contracts to state and local agencies as well as the National Cooperative Highway Research Program. Short courses on topics such as Highway Capacity are presented to state, local, and consulting agencies. Senior staff serves as university lecturers for courses in transportation planning and traffic engineering.

Our ability to provide quality transportation planning and engineering consulting services depends on advanced analytical tools that are compatible with recent hardware developments. For this reason, the firm has developed an extensive library of planning, operations and design software that is routinely used for transportation analysis and research on both large and small computer systems.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 503.228.5230 503.273.8169

MEMORANDUM

Date: December 19, 2006 **Project** #: 7460.02

To: City of Salem Planning Commission

From: Anthony Yi, P.E., Mark Vandehey, P.E., and Dave Daly

Cc: Eric Destival, City of Salem
Kevin Hottman, City of Salem
Dan Fricke, ODOT
Steve Wilson, ODOT

Project: PacTrust Kuebler Project

Subject: Supplemental to the September 2006 PacTrust Kuebler Project TIA

This memorandum responds to comments prepared by DKS Associates (Attachment "A") and Sherman, Sherman, Johnnie & Hoyt, LLP (Attachment "B") related to the PacTrust plan amendment and zone change application. The DKS Associates and Sherman, Sherman, Johnnie & Hoyt, LLP memorandums were submitted to the Planning Commission during the open record time at the end of the November 21, 2006, Public Hearing. This memorandum summarizes the comments in *italics* and provides our response in standard text.

Traffic Counts (DKS Associates, page 1) *– As discussed at the PacTrust Planning Commission meeting, the traffic counts that were utilized in the PacTrust study were conducted in July of 2005. These counts are over 12 months old and were collected in the summer when traffic volumes are typically lower... To supplement the historical interchange counts recent traffic counts were collected at the Kuebler Boulevard/27th Avenue and Battle Creek Road/Boone Road intersections. It should be noted that these counts were collected the week after Thanksgiving in order to meet the December 5th deadline allowed for written testimony. Traffic counts taken the week after Thanksgiving can be low due to the vacation time related to the holiday. Even with the counts being collected the week after Thanksgiving, the counts showed significantly higher traffic volumes (10% to 16% higher) concluding that the summer traffic counts that were utilized in the PacTrust study underestimate existing and future traffic volumes and therefore under estimates impacts (particularly in the 2007 buildout scenario).*

Response #1: The dates on which the manual turning movement counts were collected (July of 2005) are consistent with accepted engineering principles, the requirements of the ODOT Analysis Procedures Manual (APM) dated April 2006 (Attachment "C"), and the City of Salem Guidelines for the Preparation of Transportation Impact Analysis (Attachment "D"). The December 5, 2006 DKS Associates' memorandum states that the July traffic counts "...were collected in the summer when traffic volumes are typically lower." The assumption that July

2005 counts are "typically lower" is wrong. Historical traffic data collected at the closest automatic traffic recorders (located along ORE 22 on both sides of I-5) reveals that July represented peak seasonal traffic conditions in 2005. Attachment "E" contains traffic count data from the ODOT ATR's.

The DKS Associates' memorandum stated that DKS recently obtained traffic counts at the study intersections and compared them to the traffic counts used in the September 2006 TIA. There is a basic flaw with the DKS counts that makes them unreliable. The traffic counts obtained by DKS Associates were collected on Friday, December 1, 2006, one week after the Thanksgiving holiday, and therefore do not represent typical weekday data. For these reasons the DKS Associates' data cannot be relied upon for the purpose of assessing the validity of the traffic volume data used in the September 2006 TIA. As stated in the ODOT APM, "In general, days potentially influenced by state or federal holidays or other significant events that may alter normal traffic patterns should be avoided." Furthermore, the APM also explains, "It is common to avoid Monday and Friday counts when weekday data is desired, as the trip characteristics on these days generally differ from the remainder of the week." The traffic counts obtained by DKS Associates that were collected on Friday, December 1, 2006 (one week after the Thanksgiving holiday) resulted in higher traffic levels than those used in the September 2006 TIA, which utilized traffic count data collected on a typical weekday (Thursday).

Further, DKS Associates has previously accepted the July 2005 traffic counts conducted by Kittelson & Associates, Inc. An e-mail from the City of Salem, dated August 9, 2006, states that both the City and DKS Associates confirmed the use of the refined traffic forecasts as appropriate. Appendix "F" contains the email correspondence.

Finally, the traffic volumes used in the September 2006 TIA were determined using engineering principles accepted for collecting and analyzing this data. In addition to DKS Associates, approval, both City of Salem and ODOT staff accepted and approved the data, which is further evidence that the counts were properly collected and analyzed. There is no reasonable basis to conclude that there is anything unreliable with the July 2005 traffic counts or the September 2006 TIA which relies on them.

Boone Road and 27th Avenue Traffic Levels (DKS Associates, page 2) *– The City's TSP provides volume threshold for collectors between 1,600 and 10,000 vehicles per day. Adding traffic from the PacTrust zone change alone would increase the traffic level above the 10,000 vehicles per day upper threshold on both Boone Road and 27th Avenue during the 2007 PacTrust buildout scenario. Furthermore, the 2025 traffic volumes forecasts from the applicant's traffic study would far exceed the 10,000 vehicle per day threshold (27th Avenue is estimated to have 12,800 vehicles per day and Boone Road is estimated to have 13,600 vehicles per day) which would push the daily volume level of Boone Road and 27th Avenue to those consistent with a minor arterial.*

Response #2: The City provides "basic design guidelines" for average daily traffic (ADT) levels for all roadway classifications. Boone Road and 27th Avenue are classified as collectors. These "basic design guidelines" are included as Attachment "G". Per the "basic design guidelines" for a collector street, the Salem TSP provides a design ADT range between 1,600 to 10,000 vehicles per day. The City's "basic design guidelines," which includes design guidelines other than ADT range, are elements that provide guidance for each roadway classification, but do not represent required thresholds that define a roadway's form and function, particularly around traffic levels that are near

the upper and lower ranges of two classifications. Accordingly, the ADT "guideline" cannot be used as an approval criteria for this application.

Under the PacTrust proposed plan and zoning proposal, the ADT levels under 2007 build-out conditions along all segments of Boone Road and 27th Avenue are forecast below 10,000 vehicles per day. Under long-term 2025 conditions, the forecast ADT along Boone Road between Battle Creek Road and the proposed Boone Road site driveway (estimated 10,650 ADT) and along 27th Avenue between Kuebler Boulevard and the proposed 27th Avenue site driveway (estimated 10,800 ADT) are estimated near the design guideline of 10,000 ADT. These two short segments of Boone Road and 27th Avenue do not front any residential homes and improvements are proposed at both locations to accommodate near and long-term traffic demands. Also, under long-term 2025 conditions, the forecast ADT along Boone Road and 27th Avenue between the proposed site driveways (i.e. roadway segments that front the existing residential neighborhood) is forecast to be less than 6,000 ADT.

Queuing Analysis (DKS Associates, page 3) *– The PacTrust study provides queuing analysis for the 2007 Saturday mid-day and weekday PM peak hours but does not provide queuing analysis for the future 2025 scenario…*

Response #3: As identified in the September 2006 TIA, all signalized intersections along Kuebler Boulevard as well as the Battle Creek Road/Boone Road intersection are forecast to operate well over capacity and at LOS "F" under 2025 peak hour conditions, **regardless of the zoning of the subject property**.

Standard engineering practice does not purport to have the tools or the technology to reliably determine long term queuing in conditions where the demand exceeds the capacity of the roadway, as is the case here, regardless of how the PacTrust property develops (residential or commercial). A queuing analysis will not provide any reliable distinguishing information between the existing and proposed zoning scenarios in this situation. This is because queuing characteristics are very sensitive to factors such as vehicle arrival patterns and detailed settings within the signal controller, neither of which can be accurately predicted 20 years in advance for a series of oversaturated signalized intersections. In fact, it is improper as a matter of sound engineering practice to pretend to solve for long term queues in oversaturated conditions as here, when in truth such cannot be reliably achieved.

Therefore, our traffic operations analysis of 2025 conditions focuses on overall intersection operations and mitigation measures to avoid further degradation. Our analysis is consistent with sound practice and does not pretend to analyze for conditions that no sound practice can purport to analyze. Under our analysis, with the improvements proposed, the system will not be degraded beyond that which would occur if the property developed as residential land.

***Alternative Development Scenario (Sherman, Sherman, Johnnie & Hoyt, LLP, page 4)** – A PROPOSAL FOR COMPREHENSIVE PLAN AND ZONING DESIGNATIONS FOR CPC/ZC 06-6, Submitted by Wildwood, Inc. December 5, 2006*

Purpose: To illustrate alternative actions and conditions that would result in a commercial development compatible with adjacent land uses, generating traffic that could be accommodated by the allowed capacity of the surrounding street system…

Response #4: The proposed PacTrust proposal can be accommodated by the allowed capacity of the surrounding street system. Table 1 provides a comparison of estimated trip generation between the PacTrust and Wildwood, Inc. (John Miller) development scenarios.

Table 1
Comparison of Estimated Trip Generation

Development Scenario		Daily Trips	Weekday PM Peak Hour Trips	Saturday Midday Peak Hour Trips
PacTrust	Shopping Center - 290,000 s.f. Medical/Dental Office – 24,000 s.f.	9,660	900	1,350
Wildwood, Inc. [1]	Shopping Center - 244,000 s.f. Medical/Dental Office – 24,000 s.f. Single-Family Detached Housing – 92 units	9,410	885	1,285
Difference in Net New Trips		**250**	**15**	**65**
Percent Difference		**2.7 %**	**1.7 %**	**5.1 %**

[1] Development scenario submitted by Wildwood, Inc. (Attachment "B" - Sherman, Sherman, Johnnie & Hoyt letter, page 4)

A comparison of estimated trip generation between the PacTrust proposal and the development plan prepared by Wildwood, Inc. results in less than a 3-percent difference in net new daily trips. In other words, the opponents proposed development scenario and what PacTrust proposes, have nearly identical trip impacts with PacTrust's scenario having 250 more daily trips, 15 more weekday p.m. peak hour trips, and 65 more Saturday midday peak hour trips. Under these conditions, this is an insignificant variation for transportation analysis and planning. Based on this comparison, the Wildwood, Inc. proposal would very likely need the same level of transportation improvements as the PacTrust proposal. There is no functional transportation related difference between the two scenarios.

PROPOSED APPLICANT IMPROVEMENTS

The following is a summary of mitigation improvements identified in the September 2006 TIA and the November 14, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA that is proposed as transportation improvements by the Applicant:

- Provide an additional travel lane in the eastbound direction along Kuebler Boulevard from west of Battle Creek Road to the I-5 southbound ramp.
- Install a traffic signal at the Battle Creek Road/Boone Road intersections.

- Construct an exclusive northbound right-turn lane and provide overlap phasing for this movement at the Kuebler Boulevard/27th Avenue intersection.
- Provide dual westbound left-turn lanes at the Kuebler Boulevard/27th Avenue intersection.
- Provide exclusive eastbound and westbound left-turn lanes at the Boone Road/Battle Creek Road intersection.
- Re-stripe the I-5 southbound off-ramp approach to Kuebler Boulevard from a shared left/through lane to a shared left/through/right lane.
- Provide a right-in access driveway along Kuebler Boulevard, located approximately near the midpoint of Battle Creek Road and 27th Avenue. The eastbound right-turn lane should be an exclusive lane and designed to City of Salem standards.
- Provide two egress lanes and one ingress lane at the access driveway along Boone Road, located west of Cultus Avenue.
- Provide two egress lanes and one ingress lane at the access driveway along 27th Avenue, located approximately 400 feet to the south of Kuebler Boulevard.

The cost of the mitigation improvements listed above is approximately $3.6 million.

Conclusion

We trust this memorandum provides adequate documentation to respond to comments provided in DKS Associates' December 5, 2006, memorandum and Sherman, Sherman, Johnnie & Hoyt, LLP's memorandum to the City of Salem Planning Commission as it relates to traffic counts, traffic levels, vehicle queuing, and alternative development scenario. If you have any further questions, please call us at (503) 228-5230.

Attachments

Attachment A: DKS Associates Comments
Attachment B: Sherman, Sherman, Johnnie & Hoyt, LLP Comments
Attachment C: ODOT Analysis Procedures Manual
Attachment D: City of Salem Guidelines for the Preparation of Transportation Impact Analysis
Attachment E: ODOT Automatic Traffic Recorder (ATR) Data
Attachment F: Baseline Traffic Volume Confirmation E-mail
Attachment G: City of Salem TSP Basic Design Guidelines

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DKS Associates
TRANSPORTATION SOLUTIONS

REGISTERED PROFESSIONAL ENGINEER
56267
OREGON
JULY 9, 2002
SCOTT M. MANSUR
EXPIRES: 12-31-2006

MEMORANDUM

TO: City of Salem Planning Commission
Judith Moore, City of Salem

CC: John Miller, Wildwood Mahonia

FROM: Scott Mansur, PE, DKS Associates

DATE: December 5, 2006

SUBJECT: Additional Transportation Comments Related to the PacTrust Zone Change Application

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The following letter provides additional information as discussed at the Planning Commission meeting in relation to the PacTrust zone change application and traffic study.

Updated Traffic Counts:

As discussed at the PacTrust Planning Commission meeting, the traffic counts that were utilized in the PacTrust study were conducted in July of 2005. These counts are over 12 months old and were collected in the summer when traffic volumes are typically lower. Historical counts taken at the Kuebler Boulevard/I-5 southbound ramp and Kuebler Boulevard/I-5 northbound ramp intersections in September of 2005 showed that the July counts were low compared to those that were taken while school is in session. To supplement the historical interchange counts recent traffic counts were collected at the Kuebler Boulevard/27th Avenue and Battle Creek Road/Boone Road intersections. It should be noted that these counts were collected the week after Thanksgiving in order to meet the December 5th deadline allowed for written testimony. Traffic counts taken the week after Thanksgiving can be low due to the vacation time related to the holiday. Even with the counts being collected the week after Thanksgiving, the counts showed significantly higher traffic volumes (10% to 16% higher) concluding that the summer traffic counts that were utilized in the PacTrust study underestimate existing and future traffic volumes and therefore under estimate impacts (particularly in the 2007 buildout scenario). The traffic count summary is shown and Table 2 and the revised traffic counts are attached in the appendix.

Table 1: Traffic Count Comparison (PM Peak Hour)

Intersection (Count Date)	PacTrust Summer Traffic Counts (TEV)	Updated Traffic Counts (TEV)	Net Increase (%)
Kuebler Blvd./I-5 Southbound Ramp (9/29/05)	2,480	2,827	+347 (+14%)
Kuebler Blvd./27th Avenue (12/01/06)	2,223	2,435	+212 (+10%)
Battle Creek Road/Boone Road (12/01/06)	964	1,115	+151 (+16%)

TEV-Peak hour Total Entering Vehicles

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Boone Road/27th Avenue Functional Classification/PacTrust Impacts:

The following section as previously submitted has been revised based on the updated traffic counts that were recently collected. Both Boone Road and 27th Avenue are classified as collectors in the City of Salem Transportation System Plan (TSP)[1]. The City's TSP provides a volume threshold for collectors between 1,600 and 10,000 vehicles per day. Once the daily traffic volumes exceed this level, the roadway classification would be impacted. Today, Boone Road and 27th Avenue carry approximately 6,000 and 3,900 vehicles per day respectively. Based on the applicant's traffic study, 14,270 vehicles per day would be generated to and from the proposed PacTrust development on Boone Road and 27th Avenue. The majority of the 14,270 trips would be net new trips to and from Boone Road and 27th Avenue since the traffic study assumed the majority of the pass by trips would come to and from Kuebler Boulevard and Battle Creek Road. Based on the trip distribution from the applicant's traffic study, approximately 6,700 daily trips would be added to 27th Avenue and 6,250 daily trips would be added to Boone Road compared to 2,200 vehicles per day that would be generated to both roadways by the existing zoning. The PacTrust traffic volumes would more than double the existing traffic levels on Boone Road and 27th Avenue. Adding traffic from the PacTrust zone change alone would increase the traffic level above the 10,000 vehicles per day upper threshold on both Boone Road and 27th Avenue during the 2007 PacTrust buildout scenario. This would not only impact the functional classification of both roadways, but would also absorb all of the available capacity on Boone Road and 27th Avenue that would be available for tax lots 2201, 100, 200 and 300 (more than 44 acres of land) that all surround the PacTrust site and are currently vacant. Furthermore, the 2025 traffic volume forecasts from the applicant's traffic study would far exceed the 10,000 vehicle per day threshold (27th Avenue is estimated to have 12,800 vehicles per day and Boone Road is estimated to have 13,600 vehicles per day) which would push the daily volume level of Boone Road and 27th Avenue to those consistent with a minor arterial. Volume figures have been attached in the appendix that show the traffic volume levels for each of the study scenarios (based on the DKS and Kittelson counts) as well as a project 2009 background scenario.

The Transportation Planning Rule states that:

> ***SECTION 660-012-0060(1)***
>
> *Where an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation would significantly affect an existing or planned transportation facility, the local government shall put in place measures as provided in section (2) of this rule to assure that allowed land uses are consistent with the identified function, capacity, and performance standards (e.g. level of service, volume to capacity ratio, etc.) of the facility. A plan or land use regulation amendment significantly affects a transportation facility if it would:*
> *(a) Change the functional classification of an existing or planned transportation facility*

Based on the 2007 and 2025 projected daily traffic volumes from the PacTrust study, the functional classification of 27th Avenue and Boone Road would be impacted with the daily traffic volumes exceeding 10,000 vehicles per day (2025 projections show an 12,800 vehicles per day on 27th Avenue and 13,600 vehicles per day on Boone Road) as set forth in the City's TSP and therefore does not meet the TPR requirements. Even with the proposed right in driveway on Kuebler Boulevard, the 10,000 vehicle per day collector threshold would still be exceeded.

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[1] *City of Salem Transportation System Plan*, March 2005, Table 11.

Build out Assumptions

The applicant's proposed mitigation and queuing for study area intersections are based on 2007 background traffic volumes, which are unrealistic assumptions. Given the fact that the proposed development depends upon major land use actions that have not yet been applied for and the planned Kuebler widening construction as well as the developer funding mitigations would not likely begin until 2008, a more likely build out scenario would be for 2009 or beyond. The build out analysis should be reevaluated with more recent traffic counts, background traffic from the approved Sustainable Fairview development and a reasonable build out scenario (2009) to assure improvements will provide necessary infrastructure.

Queuing Analysis/Battle Creek Operation

The PacTrust study provides queuing analysis for the 2007 Saturday mid-day and weekday PM peak hours but does not provide queuing analysis for the future 2025 scenario. DKS previously requested that future 2025 queuing analysis be provided. The applicant's response was as follows[2]:

> *As previously identified in this supplemental memorandum and as indicated in Figures 1 through 1C, a design concept was developed that can accommodate vehicle queues under build-out conditions, while maintaining acceptable intersection operations under proposed zoning year 2007 total traffic conditions and avoids further degradation of all study intersections under year 2025 traffic conditions. This is without the proposed right-in only driveway on Kuebler Boulevard. These improvements proposed by the Applicant will help alleviate congestion in the study area for year 2007 total traffic to a level that is a net improvement in operations relative to the existing zoning.*
>
> *As identified in the September 2006 TIA, regardless of a change in zoning of the subject property, all of the signalized study intersections along Kuebler Boulevard and the Battle Creek Road/Boone Road intersection are forecast to operate at LOS "F" and well over capacity during the weekday p.m. and Saturday midday peak hours. Under conditions where severe traffic congestion is forecast, such as in the existing and proposed zoning conditions, vehicle queues are difficult to accurately predict due to intersection cycle failures, and as such the future year 2025 traffic operations focused on overall intersection operations and mitigations to avoid further degradation.*

The applicant has stated that the vehicle queuing only assures that project traffic can be accommodated through the year 2007. They did not provided detailed analysis past the 2007 buildout scenario. Additionally, the 2007 traffic volumes that were used to estimate improvements and storage requirements underestimates traffic since they are based on traffic counts that were collected in the summer (see prior section) and are 10% to 16% lower than non-summer traffic volumes. The queuing analysis should be revised

Future queuing and operations is especially critical on Battle Creek Road between Kuebler Boulevard and Boone Road where only 500 feet of spacing would exist between traffic signals. Having such closely spaced intersections makes is difficult to operate especially when the intersections are approaching capacity. The applicant is only assuring that things will work through 2007 but does not provide any guidance as to how operations will work in the future (i.e. 2009 and 2025). If future queuing was evaluated by the applicant (even with future improvements that would allow Battle Creek Road to operate acceptably during the 2025 scenario) for this segment it may determine that these closely spaced traffic signals would not operate acceptably or that additional lanes would be needed based on the additional traffic volume generated by the zone change. This is especially critical if additional lanes are needed in the future beyond what is identified for the 2007 buildout scenario

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[2] *Supplemental to the September 2006 PacTrust Kuebler Project TIA,* Kittelson and Associates, November 14, 2006.

because it would require the City to purchase right of way from the applicant at a later date with the development on the ground.

Kuebler Boulevard Future Operations/Seven Lane Cross Section

The applicant's traffic study showed all of the Kuebler Boulevard and Battle Creek Road intersections well over capacity in the 20-year planning horizon. Some of the intersections were forecasted to be more than 50% over capacity with the 5-lane cross section in place. To determine the improvements that would be necessary for Kuebler Boulevard to meet City standards with the proposed zone change, we evaluated Kuebler Boulevard segment from I-5 to Battle Creek Road assuming Kuebler Boulevard was widened to a 7-lane cross section to see if City standards would be met. **Even with a seven lane Kuebler Boulevard cross section, the City's volume to capacity standard of 0.90 would not be met at the Kuebler Boulevard/Battle Creek Road and Kuebler Boulevard/27th Avenue intersections.** ODOT standards would not be met at the I-5 interchange assuming a 7-lane cross section. The operational results comparing the Kuebler Boulevard five lane and seven lane cross sections is shown in Table 2.

Table 2: Kuebler Boulevard Cross Section Operational Comparison (PM Peak Hour)

	PacTrust Kuebler Analysis with 5-Lane Cross Section			Kuebler Analysis with 7-Lane Cross Section		
Intersection	LOS	Delay	v/c	LOS	Delay	v/c
Kuebler Blvd./Battle Creek Rd.	F	>80.0	1.15	D	50.7	0.91
Kuebler Blvd./27th Ave.	F	>80.0	1.48	D	42.3	0.96
Kuebler Blvd./I-5 SB Ramp	F	>80.0	1.92	F	>80.0	1.56
Kuebler Blvd./I-5 NB Ramp	F	>80.0	1.10	B	16.5	0.87

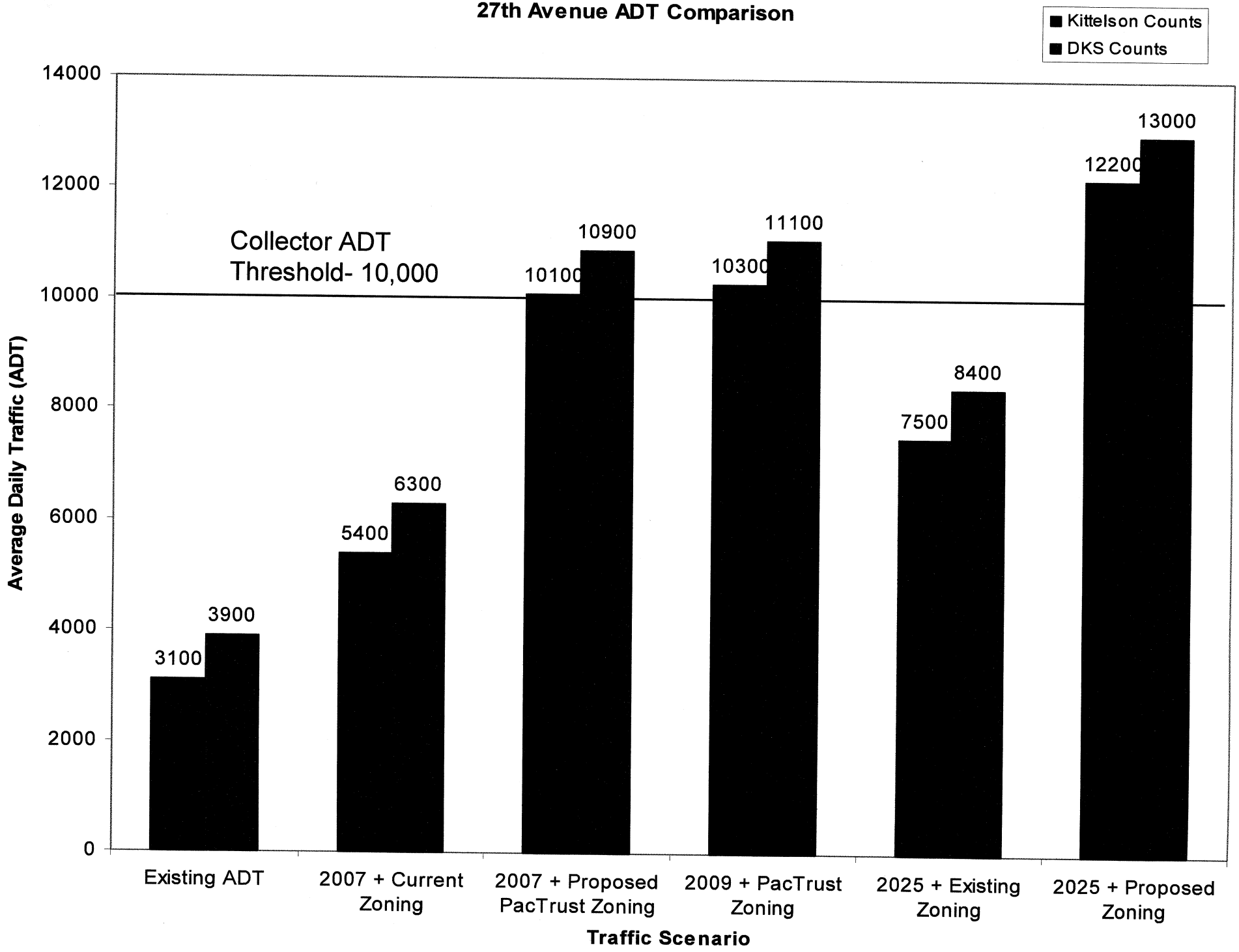
As shown in Table 2, a seven lane Kuebler Boulevard cross section alone will not meet the City's operational standards. The City would likely have to fund and construct Kuebler Boulevard improvements that include a seven lane cross section as well as other citywide improvements. At a minimum, the City should require setbacks and right of way along the PacTrust project frontage to Kuebler Boulevard to accommodate the future Kuebler Boulevard widening that would be necessary to meet City and ODOT operating standards.

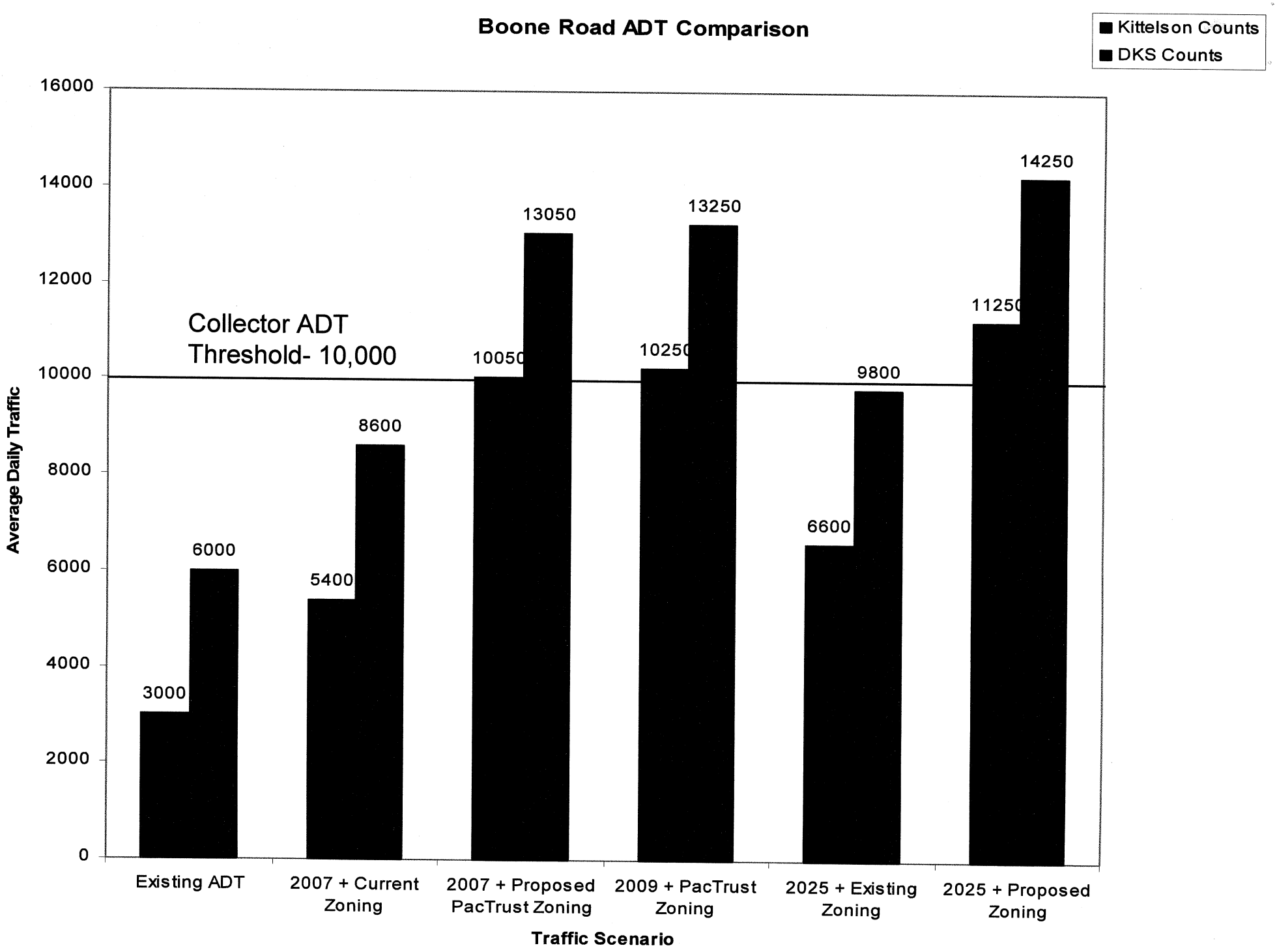
Summary

- Recent traffic counts taken while school is in session yielded that the summer traffic counts used in the PacTrust Transportation Impact Study underestimate traffic volumes by 10% to 16%.
- The proposed zone change will cause Boone Road and 27th Avenue to operate at daily traffic levels above the 10,000 vehicle per day threshold identified in the City's TSP for collector roadways during both the 2007 and 2025 scenarios.
- The functional classification of Boone Road and 27th Avenue would not be impacted based on the current zoning.
- Proposed mitigation and queuing for study area intersections are based on 2007 background traffic volumes. The analysis should be reevaluated with more recent traffic counts and a reasonable buildout scenario (2009) to assure improvements will provide necessary infrastructure.

- Future improvements to Battle Creek Road should be identified for the 2025 scenario that meet City standards and assure the short traffic signal spacing will work long term. Any widening of Battle Creek Road beyond the four lane cross section that was already identified should be facilitated with setbacks and right of way on the Applicant's and Salem Clinic properties.
- A seven lane Kuebler Blvd. cross section and other citywide improvements will be needed to meet the City's operational standards to the year 2025. The City should require setbacks and right of way along the PacTrust project frontage to Kuebler Boulevard to accommodate the future Kuebler Boulevard seven lane widening.

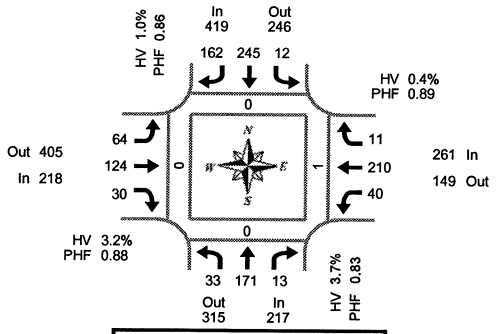
Appendix:


27th Avenue ADT Comparison
Kittelson Counts
DKS Counts
14000
12000
10000
8000
6000
4000
2000
0
Average Daily Traffic (ADT)
Collector ADT
Threshold- 10,000
3100
3900
5400
6300
10100
10900
10300
11100
7500
8400
12200
13000
Existing ADT
2007 + Current Zoning
2007 + Proposed PacTrust Zoning
2009 + PacTrust Zoning
2025 + Existing Zoning
2025 + Proposed Zoning
Traffic Scenario


Boone Road ADT Comparison
Kittelson Counts
DKS Counts
16000
14000
12000
10000
8000
6000
4000
2000
0
Average Daily Traffic
Collector ADT
Threshold- 10,000
3000
6000
5400
8600
10050
13050
10250
13250
6600
9800
11250
14250
Existing ADT
2007 + Current Zoning
2007 + Proposed PacTrust Zoning
2009 + PacTrust Zoning
2025 + Existing Zoning
2025 + Proposed Zoning
Traffic Scenario

Total Vehicle Summary

All Traffic Data Services Inc
Clay Carney
(503) 833-2740



Peak Hour Summary
4:45 PM to 5:45 PM

Battle Creek Rd SE & Boone Rd SE

Friday, December 01, 2006
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Battle Creek Rd SE				Southbound Battle Creek Rd SE				Eastbound Boone Rd SE				Westbound Boone Rd SE				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	1	13	1	0	2	20	8	0	3	4	1	0	5	13	0	0	71	0	0	0	0
4:05 PM	2	19	0	0	0	12	10	0	11	6	2	0	7	13	0	0	82	0	0	0	0
4:10 PM	2	16	2	0	2	14	10	0	7	4	2	0	3	11	0	0	73	0	0	0	0
4:15 PM	1	12	3	0	0	18	14	0	2	14	4	0	1	17	0	0	86	0	0	0	0
4:20 PM	4	15	0	0	0	23	8	0	5	6	2	0	2	16	1	0	82	0	0	0	2
4:25 PM	4	14	0	0	0	20	8	0	8	8	3	0	5	13	0	0	83	0	0	2	0
4:30 PM	1	23	0	0	1	20	10	0	4	12	2	0	6	13	0	0	92	0	0	0	0
4:35 PM	1	15	1	0	1	18	12	0	9	6	3	0	5	24	0	0	95	0	0	0	0
4:40 PM	1	14	0	0	2	14	9	0	7	11	1	0	3	25	1	0	88	0	0	0	0
4:45 PM	1	16	3	0	2	23	10	0	4	12	2	0	2	14	1	0	90	0	0	0	0
4:50 PM	1	15	0	0	0	16	22	0	1	7	2	0	1	22	1	0	88	0	0	0	0
4:55 PM	4	22	1	0	3	15	8	0	5	11	7	0	6	14	1	0	97	0	0	0	0
5:00 PM	3	14	1	0	0	25	8	0	5	10	1	0	1	16	0	0	84	0	0	0	0
5:05 PM	3	15	2	0	0	21	15	0	6	10	1	0	5	19	0	0	97	0	0	0	0
5:10 PM	1	8	0	0	1	13	16	0	2	11	2	0	4	18	1	0	77	0	0	0	0
5:15 PM	4	15	1	0	3	24	15	0	8	10	0	0	4	19	0	0	103	0	0	0	0
5:20 PM	2	13	1	0	0	27	18	0	7	14	1	0	4	14	2	0	103	0	0	0	0
5:25 PM	3	14	0	0	2	19	14	0	7	7	6	0	4	15	0	0	91	0	0	0	0
5:30 PM	5	15	2	0	0	18	12	0	8	9	3	0	1	20	1	0	94	0	0	0	0
5:35 PM	1	11	1	0	0	22	7	0	4	13	3	0	4	18	2	0	86	0	0	0	0
5:40 PM	5	13	1	0	1	22	17	0	7	10	2	0	4	21	2	0	105	0	0	1	0
5:45 PM	5	17	0	0	1	9	13	0	1	8	3	0	6	18	1	0	82	0	0	0	0
5:50 PM	3	16	0	0	3	14	12	0	2	9	1	0	5	20	1	0	86	0	0	0	0
5:55 PM	2	15	1	0	1	18	13	0	3	12	3	0	0	21	1	0	90	0	0	0	0
Total Survey	60	360	21	0	25	445	289	0	126	224	57	0	88	414	16	0	2,125	0	0	3	2

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Battle Creek Rd SE				Southbound Battle Creek Rd SE				Eastbound Boone Rd SE				Westbound Boone Rd SE				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	5	48	3	0	4	46	28	0	21	14	5	0	15	37	0	0	226	0	0	0	0
4:15 PM	9	41	3	0	0	61	30	0	15	28	9	0	8	46	1	0	251	0	0	2	2
4:30 PM	3	52	1	0	4	52	31	0	20	29	6	0	14	62	1	0	275	0	0	0	0
4:45 PM	6	53	4	0	5	54	40	0	10	30	11	0	9	50	3	0	275	0	0	0	0
5:00 PM	7	37	3	0	1	59	39	0	13	31	4	0	10	53	1	0	258	0	0	0	0
5:15 PM	9	42	2	0	5	70	47	0	22	31	7	0	12	48	2	0	297	0	0	0	0
5:30 PM	11	39	4	0	1	62	36	0	19	32	8	0	9	59	5	0	285	0	0	1	0
5:45 PM	10	48	1	0	5	41	38	0	6	29	7	0	11	59	3	0	258	0	0	0	0
Total Survey	60	360	21	0	25	445	289	0	126	224	57	0	88	414	16	0	2,125	0	0	3	2

Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound Battle Creek Rd SE				Southbound Battle Creek Rd SE				Eastbound Boone Rd SE				Westbound Boone Rd SE				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	217	315	532	0	419	246	665	0	218	405	623	0	261	149	410	0	1,115	0	0	1	0
%HV	3.7%				1.0%				3.2%				0.4%				1.8%				
PHF	0.83				0.86				0.88				0.89				0.94				

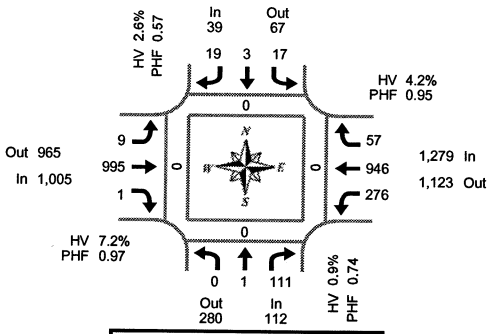
By Movement	Northbound Battle Creek Rd SE				Southbound Battle Creek Rd SE				Eastbound Boone Rd SE				Westbound Boone Rd SE				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	33	171	13	217	12	245	162	419	64	124	30	218	40	210	11	261	1,115
%HV	0.0%	4.7%	0.0%	3.7%	0.0%	0.8%	1.2%	1.0%	6.3%	2.4%	0.0%	3.2%	0.0%	0.5%	0.0%	0.4%	1.8%
PHF	0.75	0.81	0.81	0.83	0.60	0.88	0.83	0.86	0.73	0.89	0.63	0.88	0.77	0.89	0.55	0.89	0.94

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Battle Creek Rd SE				Southbound Battle Creek Rd SE				Eastbound Boone Rd SE				Westbound Boone Rd SE				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	23	194	11	0	13	213	129	0	66	101	31	0	46	195	5	0	1,027	0	0	2	2
4:15 PM	25	183	11	0	10	226	140	0	58	118	30	0	41	211	6	0	1,059	0	0	2	2
4:30 PM	25	184	10	0	15	235	157	0	65	121	28	0	45	213	7	0	1,105	0	0	0	0
4:45 PM	33	171	13	0	12	245	162	0	64	124	30	0	40	210	11	0	1,115	0	0	1	0
5:00 PM	37	166	10	0	12	232	160	0	60	123	26	0	42	219	11	0	1,098	0	0	1	0

Total Vehicle Summary

All Traffic Data Services Inc
Clay Carney
(503) 833-2740



Peak Hour Summary
4:00 PM to 5:00 PM

27th Ave SE & Kuebler Blvd SE

Friday, December 01, 2006
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 27th Ave SE				Southbound 27th Ave SE				Eastbound Kuebler Blvd SE				Westbound Kuebler Blvd SE				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	0	12	0	1	1	0	0	0	81	0	0	22	89	6	0	212	0	0	0	0
4:05 PM	0	0	4	0	4	0	3	0	1	73	0	0	26	81	7	0	199	0	0	0	0
4:10 PM	0	0	11	0	2	1	4	0	3	86	0	0	15	86	5	0	213	0	0	0	0
4:15 PM	0	0	8	0	1	0	2	0	0	83	0	0	14	64	7	0	179	0	0	0	0
4:20 PM	0	0	6	0	0	0	0	0	0	87	0	0	21	80	6	0	200	0	0	0	0
4:25 PM	0	0	10	0	2	0	2	0	3	78	1	0	30	75	4	0	205	0	0	0	0
4:30 PM	0	1	7	0	5	0	1	0	0	90	0	0	14	83	6	0	207	0	0	0	0
4:35 PM	0	0	8	0	0	0	1	0	0	81	0	0	32	78	4	0	204	0	0	0	0
4:40 PM	0	0	11	0	0	1	0	0	0	81	0	0	27	82	4	0	206	0	0	0	0
4:45 PM	0	0	18	0	1	0	4	0	0	83	0	0	21	68	4	0	199	0	0	0	0
4:50 PM	0	0	9	0	1	0	0	0	1	85	0	0	31	84	3	0	214	0	0	0	0
4:55 PM	0	0	7	0	0	0	2	0	1	87	0	0	23	76	1	0	197	0	0	0	0
5:00 PM	0	0	12	0	0	0	0	0	1	73	0	0	17	85	5	0	193	0	0	0	0
5:05 PM	0	0	11	0	4	0	1	0	1	67	0	0	20	81	1	0	186	0	0	0	0
5:10 PM	1	0	7	0	0	0	3	0	0	79	0	0	24	78	5	0	197	0	0	0	0
5:15 PM	0	0	10	0	2	0	0	0	0	79	0	0	27	85	3	0	206	0	0	0	0
5:20 PM	0	0	11	0	0	0	3	0	0	101	0	0	18	85	3	0	221	0	0	0	0
5:25 PM	0	0	8	0	0	0	0	0	2	75	0	0	21	79	3	0	188	0	0	0	0
5:30 PM	0	0	10	0	0	1	1	0	0	66	0	0	39	78	1	0	196	0	0	0	0
5:35 PM	0	0	10	0	0	0	1	0	0	82	0	0	14	86	4	0	197	0	0	0	0
5:40 PM	1	0	15	0	1	0	2	0	0	92	0	0	31	87	4	0	233	0	0	0	0
5:45 PM	0	0	11	0	0	0	2	0	0	75	0	0	33	84	2	0	207	0	0	0	0
5:50 PM	0	0	4	0	1	0	0	0	0	79	0	0	26	85	4	0	199	0	0	0	0
5:55 PM	0	0	13	0	5	0	0	0	1	67	0	0	24	73	2	0	185	0	0	0	0
Total Survey	2	1	233	0	30	4	32	0	14	1,930	1	0	570	1,932	94	0	4,843	0	0	0	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 27th Ave SE				Southbound 27th Ave SE				Eastbound Kuebler Blvd SE				Westbound Kuebler Blvd SE				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	0	27	0	7	2	7	0	4	240	0	0	63	256	18	0	624	0	0	0	0
4:15 PM	0	0	24	0	3	0	4	0	3	248	1	0	65	219	17	0	584	0	0	0	0
4:30 PM	0	1	26	0	5	1	2	0	0	252	0	0	73	243	14	0	617	0	0	0	0
4:45 PM	0	0	34	0	2	0	6	0	2	255	0	0	75	228	8	0	610	0	0	0	0
5:00 PM	1	0	30	0	4	0	4	0	2	219	0	0	61	244	11	0	576	0	0	0	0
5:15 PM	0	0	29	0	2	0	3	0	2	255	0	0	66	249	9	0	615	0	0	0	0
5:30 PM	1	0	35	0	1	1	4	0	0	240	0	0	84	251	9	0	626	0	0	0	0
5:45 PM	0	0	28	0	6	0	2	0	1	221	0	0	83	242	8	0	591	0	0	0	0
Total Survey	2	1	233	0	30	4	32	0	14	1,930	1	0	570	1,932	94	0	4,843	0	0	0	0

Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound 27th Ave SE				Southbound 27th Ave SE				Eastbound Kuebler Blvd SE				Westbound Kuebler Blvd SE				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	112	280	392	0	39	67	106	0	1,005	965	1,970	0	1,279	1,123	2,402	0	2,435	0	0	0	0
%HV	0.9%				2.6%				7.2%				4.2%				5.3%				
PHF	0.74				0.57				0.97				0.95				0.98				

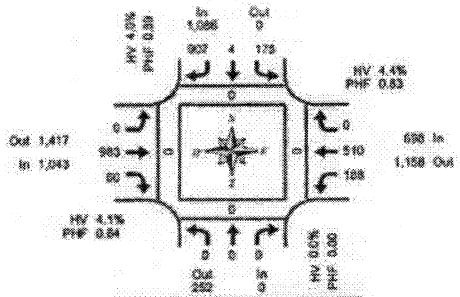
By Movement	Northbound 27th Ave SE				Southbound 27th Ave SE				Eastbound Kuebler Blvd SE				Westbound Kuebler Blvd SE				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1	111	112	17	3	19	39	9	995	1	1,005	276	946	57	1,279	2,435
%HV	0.0%	0.0%	0.9%	0.9%	5.9%	0.0%	0.0%	2.6%	0.0%	7.2%	0.0%	7.2%	0.4%	5.0%	10.5%	4.2%	5.3%
PHF	0.00	0.25	0.73	0.74	0.61	0.38	0.53	0.57	0.56	0.97	0.25	0.97	0.86	0.92	0.75	0.95	0.98

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound 27th Ave SE				Southbound 27th Ave SE				Eastbound Kuebler Blvd SE				Westbound Kuebler Blvd SE				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	1	111	0	17	3	19	0	9	995	1	0	276	946	57	0	2,435	0	0	0	0
4:15 PM	1	1	114	0	14	1	16	0	7	974	1	0	274	934	50	0	2,387	0	0	0	0
4:30 PM	1	1	119	0	13	1	15	0	6	981	0	0	275	964	42	0	2,418	0	0	0	0
4:45 PM	2	0	128	0	9	1	17	0	6	969	0	0	286	972	37	0	2,427	0	0	0	0
5:00 PM	2	0	122	0	13	1	13	0	5	935	0	0	294	986	37	0	2,408	0	0	0	0

Total Vehicle Summary

All Traffic Data
Clay Carney
(503) 833-2740



I-5 SB Ramps & Kuebler Blvd

Thursday, September 29, 2005
4:00 PM to 6:00 PM

Peak Hour Summary
4:45 PM to 5:45 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound I-5 SB Ramps					Southbound I-5 SB Ramps					Eastbound Kuebler Blvd					Westbound Kuebler Blvd					Interval Total	Pedestrians Crosswalk			
	L	T	R		Bikes	L	T	R		Bikes	L	T	R		Bikes	L	T	R		Bikes		North	South	East	West
16:00	0	0	0		0	4	0	61		0	0	65	4		0	8	31	0		0	173	0	0	0	0
16:05	0	0	0		0	22	0	77		0	0	64	5		0	14	42	0		0	224	0	0	0	0
16:10	0	0	0		0	8	0	58		0	0	65	6		0	11	63	0		0	243	0	0	0	0
16:15	0	0	0		0	11	0	62		0	0	76	6		0	14	41	0		0	213	0	0	0	0
16:20	0	0	0		0	13	0	90		0	0	66	4		0	17	54	0		0	244	0	0	0	0
16:25	0	0	0		0	23	1	76		0	0	58	3		0	20	56	0		0	232	0	0	0	0
16:30	0	0	0		0	8	0	94		0	0	74	3		0	9	46	0		0	224	0	0	0	0
16:35	0	0	0		0	20	0	82		0	0	85	9		0	17	47	0		0	270	0	0	0	0
16:40	0	0	0		0	8	0	90		0	0	80	4		0	13	28	0		0	223	0	0	0	0
16:45	0	0	0		0	9	0	71		0	0	79	2		0	11	37	0		0	208	0	0	0	0
16:50	0	0	0		0	8	0	73		0	0	80	2		0	11	45	0		0	219	0	0	0	0
16:55	0	0	0		0	16	0	83		0	0	71	5		0	14	38	0		0	228	0	0	0	0
17:00	0	0	0		0	11	0	83		0	0	86	5		0	20	33	0		0	223	0	0	0	0
17:05	0	0	0		0	13	0	74		0	0	36	0		0	22	32	0		0	199	0	0	0	0
17:10	0	0	0		0	20	0	69		0	0	106	6		0	12	30	0		0	263	0	0	0	0
17:15	0	0	0		0	19	0	80		0	0	92	7		0	17	45	0		0	262	0	0	0	0
17:20	0	0	0		0	21	1	83		0	0	88	10		0	13	86	0		0	282	0	0	0	0
17:25	0	0	0		0	14	0	91		0	0	74	4		0	21	41	0		0	245	0	0	0	0
17:30	0	0	0		0	13	0	83		0	0	82	4		0	17	32	0		0	231	0	0	0	0
17:35	0	0	0		0	15	3	85		0	0	91	8		0	17	36	0		0	255	0	0	0	0
17:40	0	0	0		0	14	0	99		0	0	79	4		0	13	33	0		0	233	0	0	0	0
17:45	0	0	0		0	4	0	88		0	0	73	2		0	13	38	0		0	194	0	0	0	0
17:50	0	0	0		0	7	0	72		0	0	71	1		0	13	34	0		0	198	0	0	0	0
17:55	0	0	0		0	10	0	86		0	0	75	4		0	5	42	0		0	217	0	0	0	0
Total Survey	0	0	0		0	313	5	1,807		0	0	1,850	114		0	343	1,030	0		0	5,462	0	0	0	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound I-5 SB Ramps					Southbound I-5 SB Ramps					Eastbound Kuebler Blvd					Westbound Kuebler Blvd					Interval Total	Pedestrians Crosswalk			
	L	T	R		Bikes	L	T	R		Bikes	L	T	R		Bikes	L	T	R		Bikes		North	South	East	West
16:00	0	0	0		0	34	0	204		0	0	218	15		0	33	136	0		0	540	0	0	0	0
16:15	0	0	0		0	47	1	222		0	0	201	18		0	51	121	0		0	659	0	0	0	0
16:30	0	0	0		0	36	0	256		0	0	229	16		0	38	122	0		0	697	0	0	0	0
16:45	0	0	0		0	35	0	227		0	0	227	9		0	36	120	0		0	654	0	0	0	0
17:00	0	0	0		0	44	0	208		0	0	250	14		0	34	117	0		0	665	0	0	0	0
17:15	0	0	0		0	54	1	215		0	0	234	21		0	51	152	0		0	749	0	0	0	0
17:30	0	0	0		0	42	3	253		0	0	252	16		0	47	121	0		0	739	0	0	0	0
17:45	0	0	0		0	21	0	218		0	0	218	7		0	32	112	0		0	609	0	0	0	0
Total Survey	0	0	0		0	313	5	1,807		0	0	1,850	114		0	343	1,030	0		0	5,462	0	0	0	0

Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound I-5 SB Ramps				Southbound I-5 SB Ramps				Eastbound Kuebler Blvd				Westbound Kuebler Blvd				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	0	552	552	0	1,086	0	1,086	0	1,043	1,417	2,460	0	696	1,158	1,854	0	2,827
%HV		0.0%				4.0%				4.1%				4.4%			4.1%
PHF		0.00				0.89				0.84				0.83			0.92

By Movement	Northbound I-5 SB Ramps					Southbound I-5 SB Ramps					Eastbound Kuebler Blvd					Westbound Kuebler Blvd					Total
	L	T	R		Total	L	T	R		Total	L	T	R		Total	L	T	R		Total	
Volume	0	0	0		0	175	4	907		1,086	0	963	80		1,043	166	510	0		696	2,827
%HV	0.0%	0.0%	0.0%		0.0%	14.3%	0.0%	2.0%		4.0%	0.0%	4.0%	6.7%		4.1%	6.5%	3.5%	0.0%		4.4%	4.1%
PHF	0.00	0.00	0.00		0.00	0.73	0.33	0.88		0.89	0.00	0.86	0.65		0.84	0.84	0.79	0.00		0.83	0.92

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound I-5 SB Ramps					Southbound I-5 SB Ramps					Eastbound Kuebler Blvd					Westbound Kuebler Blvd					Interval Total	Pedestrians Crosswalk			
	L	T	R		Bikes	L	T	R		Bikes	L	T	R		Bikes	L	T	R		Bikes		North	South	East	West
16:00	0	0	0		0	152	1	909		0	0	875	56		0	158	528	0		0	2,680	0	0	0	0
16:15	0	0	0		0	152	1	911		0	0	957	55		0	180	529	0		0	2,725	0	0	0	0
16:30	0	0	0		0	159	1	908		0	0	990	60		0	180	510	0		0	2,765	0	0	0	0
16:45	0	0	0		0	175	4	907		0	0	963	80		0	166	510	0		0	2,827	0	0	0	0

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MELISSA SEIFER BRIGGS, Associate

✧Licensed in OR and WA

SUMMARY OF CRITICAL FLAWS IN THE PACTRUST COMPREHENSIVE PLAN AMENDMENT PROPOSAL

The Pacific Realty Associates proposal for a comprehensive plan amendment and zone change fails to satisfy the criteria in the following ways:

- **The proposal seeks a comprehensive plan amendment. Accordingly, the Planning Commission is free to consider whether the proposal is good "planning". If it is not, the Commission is free to deny, or modify the proposal.**
- **If approved, the proposed scale of the development will result in significant adverse impacts on the neighborhood**
  - A proposal roughly 2/3 the size of Applicant's was denied on adjacent property in 2002 because it provided too much commercial services to be supported by the "vicinity" defined by Applicant.
  - Applicant's statements at the hearing indicate the population they expect in the "vicinity" will be a approximately 13,000 people. Accepted economic analysis for the success of commercial centers demonstrates a development of the size of Applicant's proposal cannot survive on such a small customer base.
  - Applicant provides absolutely no information to justify a commercial center of the size or scope proposed.
  - **The 225,000 square foot question**. At the hearing applicant indicated it intended to construct a grocery store, drug store, and community services such as a hair salon, daycare, and pet shop. A large grocery store would be 50,000 square feet, and a large drug store 15,000 square feet. Thus, of the 290,000 square feet of commercial space proposed by applicant, would the balance of 225,000 square feet be filled by hair salons, day care facilities and pet stores?
- **The scale of the proposal results in violations of the Transportation Planning Rule (TPR).**
  - Using Applicant's traffic counts, Boone Road and 27th Avenue will have more than the 10,000 trips per day allowed by their classification as collector streets within the planning period ending in 2025.
  - Using traffic counts obtained December 1, 2006, Boone Road and 27th Avenue will have more than the 10,000 vehicle trips per day allowed by their designation as collector streets in the year 2007 under the proposed zoning.
  - Applicant's traffic impact analysis (TIA) is fundamentally flawed in that all of its analysis assumes a 2007 build out when such a build out is impossible based on required planning actions, and construction schedules.

- December 1, 2006 traffic counts demonstrate significantly higher traffic volumes exist than assumed by Applicant's TIA. Accordingly, there is no evidence the mitigation proposed by the applicant will function at required levels. Applicant did no analysis of what will be required for the traffic system surrounding the project to function at appropriate levels in 2025, as a result approval of the project could make appropriate function of Kuebler Boulevard impossible to achieve in the future.

- **Applicant's proposal does not contain adequate information to satisfy Goal 9.**
  - Goal 9 requires an economic opportunity analysis be performed to support the comprehensive plan amendment. Applicant's proposal relies on information unrelated to this project, which does not take into account the impact of the project on downtown, and alternative available sites identified in the study on which applicant relies.

- **Applicant's proposal violates Goal 10 requiring adequate housing land be available.**
  - Just two weeks before this matter was heard, the Planning Commission adopted findings indicating there is an inadequate supply of residential land in the City. Applicant now asks the Commission to conclude there is an adequate supply of residential land, so the needed, easily developed residential land that is the subject of this proposal can be converted to a commercially use of an unjustified size.

- **Applicant asks for virtually unrestricted approval, while providing no information regarding what will be constructed on the site. Accordingly, impacts of the project are impossible to determine and therefore, and it cannot be approved.**
  - Salem's Comprehensive Plan specifically requires a site plan be submitted to approve commercial development. Applicant refuses to provide even the most rudimentary information regarding the scope of the development.

WAYS IN WHICH ALTERNATIVE CONCEPT MAY DEMONSTRATE COMPLIANCE WITH COMPREHENSIVE PLAN AMENDMENT

The attached alternative concept may eliminate the critical flaws in PacTrust's Comprehensive Plan Amendment proposal in the following ways:

- The reduced scale of the commercial portion of the development provides for commercial services on a scale which can likely be serviced by the vicinity as defined by applicant.
- The preservation of 9.2 acres of residential property immediately adjacent to existing residential development provides an appropriate buffer between existing residential development and planned commercial development.
- Relocation of the commercial office from the northwest to southwest portion of the property, provides appropriate transition from the existing church, to proposed commercial development.
- The reduced scale of commercial development and addition of additional office space reduces traffic impacts.
- The inclusion of additional office space provides commercial office land to support the anticipated growth in professional service fields.
- Preserving 9.2 acres of ground in single residential zoning preserves attractive easily developed residential ground necessary to meet the housing supply.
- The conditions of approval assure construction of buildings which are less likely to have adverse impact on surrounding properties.

The reduced impacts are further supported the narrative prepared by my client included on the attached plan.

A PROPOSAL FOR COMPREHENSIVE PLAN AND ZONING DESIGNATIONS FOR CPC/ZC 06-6
Submitted by Wildwood, Inc. December 5, 2006

Purpose: To illustrate alternative actions and conditions that would result in a commercial development compatible with adjacent land uses, generating traffic that could be accommodated by the allowed capacity of the surrounding street system, and at a scale appropriate to the stated service area. The developer would be responsible for creating a site plan that would identify specific sizes, uses or locations of individual buildings, as that is not the purpose of this proposed alternative

Recommended Actions: As the applicant indicates, it is necessary to deal with the 28.4 acres in two steps: 1. the current application relating to the easterly 18.4 acres currently designated Developing Residential and zoned RA) and, 2. A future application for the westerly 10 acres (Salem Clinic Property).

Current Application, CPC/ZC 06-6: (Easterly 18.4 acres)

Area 1A (shown in blue): Grant a Commercial Comprehensive Plan designation and Commercial Retail (CR) zoning for the northerly 9.2 acres of the parcel with a maximum building area of 158,000 sq. ft. and a maximum building height of 35'.

Area 1B (shown in beige): Retain Residential designation and RA zoning on the southerly 9.2 acres.

Future Planning Commission Actions, Parcel 2: In response to a future application:

Area 2A (shown in green): Grant CR zoning for the northerly 5.25 acres, with a maximum building area of 58,000 sq. ft. and a maximum building height of 35'.

Area 2B (shown in yellow): Redesignate the southerly 4.75 acres CO, with a maximum building area of 52,000 sq. ft. and a maximum building height of 35 feet.

Discussion: The scale and intensity of the current PacTrust proposal (CPC/ZC 06-06, which includes 314,000 sq. ft. of commercial buildings on 28.4 acres) results in the violation of adopted traffic standards relating to the capacity of the surrounding streets; places Commercial Retail (CR) zoning opposite existing single family residences and a neighborhood church, and is not justified by the applicant's stated service area. Adoption of a revised version of the original application with specified maximum allowable building areas and heights would:

Retain the applicant's ratio of building area to site area in the commercial areas;

Reduce the impact and traffic by using Commercial Office (CO) and Residential (RA) zoning in locations opposite existing the church and single family uses.

Result in CR Zoning on 19.2 acres of land directly adjacent to Kuebler Blvd. and up to 210,000 sq. ft. of building of which:
14.45 acres is zoned CR (area 1A) and up to 158,000 sq. ft. of building
5.25 Acres of CR (area 2A) and up to 58,000 sq. ft. of building.

Retain 9.2 acres (area 1B shown in beige) of the current residential zoning allowing up to 92 dwelling units and serve as an appropriate transition from the existing adjacent residential use.

Include 4.75 acres of CO zoning (equal to the amount currently zoned CO on the Salem Clinic Property) and up to 52,000 sq. feet of office building where only 24,000 sq. ft. are now allowed under the current conditional zone change.

Analysis Procedures Manual

April 2006

Oregon Department of Transportation
Transportation Development Division
Planning Section
Transportation Planning Analysis Unit
Salem, Oregon

3.3 Vehicle Count Surveys

The data collected from vehicle count surveys is used in nearly all types of analysis procedures, and can include information regarding volumes of vehicles, types of vehicles, vehicle speeds and directions of vehicle flow. When such information is needed, the analyst must determine the appropriate time and method of data collection to obtain the desired results.

3.3.1 Vehicle Count Locations

Vehicle count locations should be identified in the project SOW, and should be determined based on the needs of the subject project. For TISs, the analysis area and study intersections are typically selected from estimates of anticipated impacts from added traffic based on site trip generation and distribution, and existing intersection operations. For most other project types the analysis area and study intersections are selected by considering the problem that is being addressed by the study, and the information that will be needed to fully assess it and propose appropriate solutions.

3.3.2 Vehicle Count Periods

The selection of the time and date of a vehicle count survey is often determined by the analysis needs of the project. For most projects, the 30 HV should be used to represent design volumes. In fully developed portions of Metropolitan Planning Organization (MPO) areas, the 30th highest hour is generally assumed to be represented by the weekday peak hour. Where 30 HV will be used in analysis, the counts should be taken as close to the 30th highest hour as possible. This typically requires collecting counts on a weekday afternoon (usually in summer) in most larger urban areas, but may include weekends for high recreation areas (the coast), or areas experiencing lunch hour peaks or high reverse direction flows during the day. There may be instances where both a weekday and weekend traffic count will be needed for areas such as the coast, Sisters, or other recreational areas with various seasonal and weekend traffic characteristics. Caution should be exercised when seasonally adjusting a count to the 30 HV. If the adjustment is more than 30%, the characteristics of the traffic and its flows are most likely NOT represented by the count information. Turn movement patterns can be so different they cannot be adequately represented by a seasonal adjustment. See Chapter 4, Design Hour Volumes. In general, days potentially influenced by state or federal holidays or other significant events that may alter normal traffic patterns should be avoided. Consideration should also be given to the presence of schools and major employers or attractions that experience significant peaks in generated trips due to shift changes or event scheduling. It is also common to avoid Monday and Friday counts when weekday data is desired, as the trip characteristics on these days generally differ from the remainder of the week.

B. Proposed Land Use.

1. Change in Land Use.

2. Other Developments Approved in Vicinity. City will provide listing.

II. Inventory Existing and Planned Transportation System.

A. Scope of Impact Analysis. Describe the location of new facilities and existing facilities impacted by increased traffic. Increased traffic is defined by the types of facility as follows:

1. Driveways. For development generating more than 50 trips in any one direction during any peak hour, all intersections created by driveways serving the site.

2. Alleys. If used for access to the development and the proposed development would generate more than 10 trips in any one direction during any peak hour.

3. Local Streets. If used for access to the development and the development would generate more than 10 trips in any one direction during any peak hour.

4. Collectors and Arterials. For development generating more than 50 trips in any one direction during any peak hour on the facility.

B. Existing Transportation System. All pertinent data in the City's possession will be supplied by the City. All other data required for the TIA shall be provided by the applicant. The TIA shall address the following:

1. Street Network by Functional Classification.

2. Geometrics of Network and Intersections.

3. Traffic Control Locations.

4. Signal Timing and Signal System Operation.

5. Site Access Points.

6. Existing Right-of-Way.

7. Hourly Traffic Counts, less than 2 years old.

8. Turning Movement Counts, less than 2 years old.

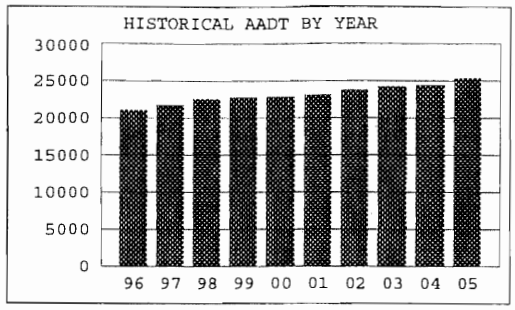
9. Accident Data, last 3 calendar years.

Location: ORE22 MP 2.82, NORTH SANTIAM HIGHWAY, NO. 162
0.9 mile east of Lancaster Dr Interchange

Recorder: NORTH SANTIAM, 24-004
Installed: January, 1967

HISTORICAL TRAFFIC DATA

Year	Average Daily Traffic	Percent_of_ADT Max Day	Max Hour	10TH Hour	20TH Hour	30TH Hour
1996	21011	140	11.4	10.9	10.7	10.6
1997	21783	135	11.1	10.5	10.2	10.0
1998	22547	137	11.2	10.8	10.6	10.4
1999	22751	136	11.2	10.7	10.4	10.2
2000	22762	***	****	****	****	****
2001	23096	***	****	****	****	****
2002	23749	***	****	****	****	****
2003	24196	136	11.0	10.6	10.4	10.2
2004	24414	139	11.1	10.6	10.4	10.2
2005	25361	141	11.3	10.7	10.6	10.3



2005 TRAFFIC DATA

	Average Weekday Traffic	Percent of ADT	Average Daily Traffic	Percent of ADT
January	24018	95	22072	87
February	24745	98	23476	93
March	25180	99	24085	95
April	25453	100	24230	96
May	26296	104	25680	101
June	28083	111	27233	107
July	29800	118	29564	117
August	27602	109	27578	109
September	26800	106	26000	103
October	26000	103	25000	99
November	26600	105	24600	97
December	26422	104	24813	98

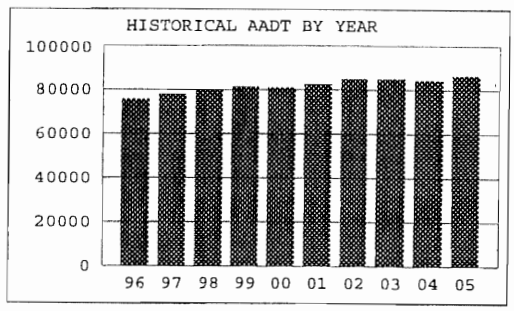
Classification Breakdown	Percent of ADT
Passenger Cars	90.5
Other 2 axle 4 tire vehicles	2.6
Single Unit 2 axle 6 tire	1.6
Single Unit 3 axle	1.8
Single Unit 4 axle or more	0.1
Single Trailer Truck 4 axle or less	0.2
Single Trailer Truck 5 axle	1.6
Single Trailer Truck 6 axle or more	0.6
Dbl-Trailer Truck 5 axle or less	0.2
Dbl-Trailer Truck 6 axle	0.3
Dbl-Trailer Truck 7 axle or more	0.4
Triple Trailer Trucks	0.0
Buses	0.1
Motorcycles & Scooters	0.0

Location: ORE22 MP 25.72, WILLAMINA-SALEM HIGHWAY, NO. 30
on Marion and Center Street Bridges in Salem

Recorder: SALEM BRIDGES, 24-014
Installed: January, 1953

HISTORICAL TRAFFIC DATA

Year	Average Daily Traffic	Percent_of_ADT Max Day	Max Hour	10TH Hour	20TH Hour	30TH Hour
1996	75605	119	10.4	10.1	9.9	9.8
1997	78016	119	10.3	9.8	9.8	9.7
1998	79677	120	10.2	9.9	9.7	9.6
1999	81402	121	9.9	9.7	9.6	9.6
2000	80956	120	9.8	9.7	9.6	9.5
2001	82606	120	9.7	9.5	9.5	9.4
2002	84900	125	10.1	9.6	9.5	9.4
2003	85000	121	10.4	9.5	9.3	9.3
2004	84212	121	10.0	9.7	9.6	9.6
2005	86727	120	9.7	9.6	9.6	9.5



2005 TRAFFIC DATA

	Average Weekday Traffic	Percent of ADT	Average Daily Traffic	Percent of ADT
January	86854	100	80365	93
February	89818	104	85477	99
March	90312	104	85530	99
April	92959	107	88048	102
May	92251	106	88696	102
June	94901	109	89405	103
July	93215	107	89088	103
August	94400	109	90500	104
September	92483	107	88824	102
October	92334	106	87996	101
November	89500	103	83500	96
December	86500	100	83300	96

Classification Breakdown	Percent of ADT
Passenger Cars	63.7
Other 2 axle 4 tire vehicles	31.6
Single Unit 2 axle 6 tire	1.9
Single Unit 3 axle	0.4
Single Unit 4 axle or more	0.0
Single Trailer Truck 4 axle or less	0.2
Single Trailer Truck 5 axle	1.3
Single Trailer Truck 6 axle or more	0.3
Dbl-Trailer Truck 5 axle or less	0.0
Dbl-Trailer Truck 6 axle	0.0
Dbl-Trailer Truck 7 axle or more	0.2
Triple Trailer Trucks	0.0
Buses	0.2
Motorcycles & Scooters	0.2

From: Eric Destival [EDestival@cityofsalem.net]
Sent: Wednesday, August 09, 2006 2:23 PM
To: Dave Daly; Stephen.B.Wilson@odot.state.or.us
Cc: Kevin Hottmann; smm@dkspdx.com; Anthony Yi; daniel.l.fricke@odot.state.or.us; David.WARREN@odot.state.or.us
Subject: Re: FW: PacTrust Kuebler Project - Refined Future TrafficVolumes

Dave,
Both Scott with DKS and myself are OK with the refined traffic forecasts for 2025 with Eagles Crest. You may proceed. The other question you had was about the base saturation flow rate assumption.
The city is OK with using the 1900 vph rate from the HCM (p16-10 in HCM 2000). This is commonly used in other studies in the city. For ODOT intersections please check with Steve Wilson. He will be back on Monday. Thanks.

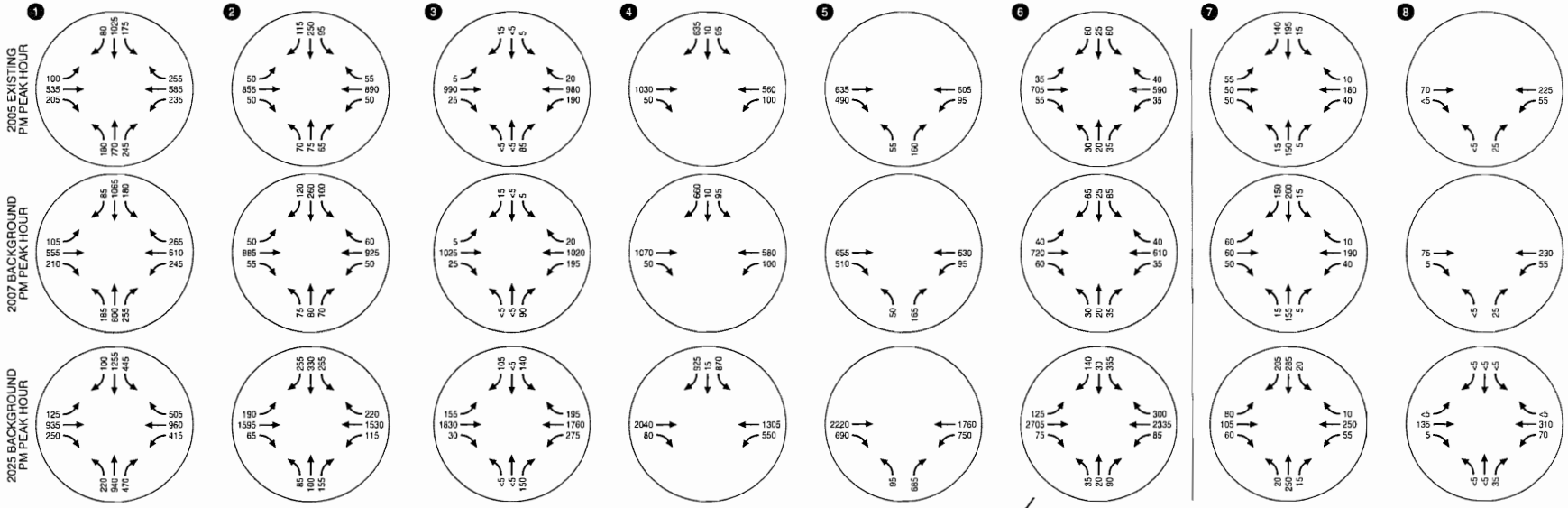
Also,
I would like the Synchro input for the study intersections. It is fine to send the input from the prior submission right now. I want to verify turn lane lengths and other input assumptions. Thanks much!

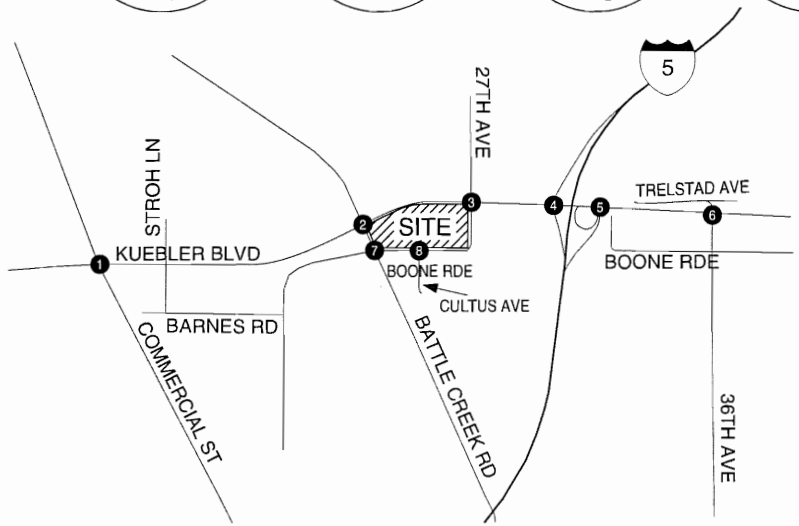
Eric Destival, P.E.
Assistant City Traffic Engineer
City of Salem Public Works
phone 503-588-6211
fax 503-588-6025

>>> "Dave Daly" <ddaly@kittelson.com> 08/08/06 5:42 PM >>>
Hi Steve,
This is a copy of the email that I sent to Eric Destival at the City of Salem regarding our refined forecast traffic volumes for the PacTrust Kuebler Project. If you have any questions please feel free to give us a call. The traffic volumes are in the attached figure.

Thanks,
Dave Daly

> _____
> From: Dave Daly
> Sent: Tuesday, August 08, 2006 1:51 PM
> To: 'Eric Destival'
> Cc: 'khottmann@cityofsalem.net'; Anthony Yi; 'Jeffrey R. Tross';
> 'Dick Loffelmacher'; 'EricS@pactrustlp.com'
> Subject: PacTrust Kuebler Project - Refined Future Traffic
> Volumes
>
> Hi Eric,
>
> As requested, please find attached a figure showing our refined
> forecast year 2025 background traffic volumes. The 2025 volumes
> include the proposed Eagles Nest development. We formally request
> that the City of Salem provide written confirmation regarding the
> forecast traffic volumes as soon as possible so that we can proceed
> with our analysis. Please let us know if you have any questions
> regarding these volumes.
>
> Thanks,
> Dave Daly
>
> <<7460figs_synchro_tia update Figure for City.pdf>>
>





PRELIMINARY (08/08/06)

FORECAST TRAFFIC VOLUMES
WEEKDAY PM PEAK HOUR
SALEM, OREGON

FIGURE 1

Kittelson & Associates, Inc.
Transportation Engineering / Planning

H:\projfile\7460 - Kuebler Retail Center\dwgs\figs\TIA Update Aug 2006\7460figs_synchro_tia update.dwg Aug 08, 2006 - 11:51am - ddaly Layout Tab: Figure for City

Table 11
City of Salem Street Classification System and Basic Design Guidelines

Classification	Function	Ultimate Design ADT	Ultimate Traffic Design	Bicycles	Sidewalks	On-street Parking	Access Control	Minimum Right-of-way
Freeway	High capacity, high speed, highway that serves regional, statewide, and interstate travel.	50,000 +	Divided highway with minimum of 4 travel lanes designed to federal and state interstate highway standards.	Allowed on shoulder per Oregon State Statute (ORS).	No sidewalks, however pedestrians allowed on shoulder per ORS.	Not Permitted	Fully controlled through grade-separated interchanges.	To be determined on a project specific basis.
Parkway	High capacity, high speed, roadway that primarily serves regional and intracity travel.	30,000 to 60,000	Divided highway with minimum of 2-4 travel lanes with raised center median.	Bicycle lane or separate path	Sidewalks next to roadway or separate path	Not permitted	Limited access available through at-grade intersections or grade-separated interchanges with selected arterial and collector streets.	120 feet (2-4 travel lanes) 144 feet (6 travel lanes)
Major Arterial	High-capacity street that primarily serves regional and intracity travel. Serves as main radial and peripheral routes through the City.	15,000 to 50,000	Depending on expected traffic volumes, has a minimum 4 travel lanes with left-turn pockets, raised medians, or center turn lanes where appropriate.	Bicycle lane	Yes	Not permitted (except in existing business or residential districts where off-street parking alternatives are not available)	Minimum street and driveway spacing per Salem Revised Code.	96 feet (4 travel lanes)
Minor Arterial	Primarily serves intracity and interneighbor-hood traffic. Serves as a peripheral arterial street.	7,000 to 20,000	Has a minimum of 2 travel lanes with left-turn pockets, raised center median, or center turn lane where appropriate.	Bicycle lane	Yes	Not permitted (except in existing business or residential districts where off-street parking alternatives are not available)	Minimum street and driveway spacing per Salem Revised Code.	72 feet
Collector	Primarily distributes traffic between neighborhoods, activity centers and the arterial street system. Secondarily provides property access.	1,600 to 10,000	Has a minimum of 2 travel lanes with left-turn pockets where appropriate.	Bicycle lane or route per Bicycle Plan Map	Yes	Permitted where possible.	Minimum street and driveway spacing per Salem Revised Code.	60 feet
Local Street	Provides access to properties and basic circulation within a neighborhood.	Residential livability concerns arise at approxi-mately 1,600.	Standard width of improvement is 30 feet curb-to-curb. May be reduced per SRC.	Shared roadway or bicycle route per Bicycle Plan Map	Yes	Permitted	Minimum driveway spacing from intersections per Salem Revised Code (SRC).	60 feet (with 30 feet improvement) May be reduced in some instances areas per SRC.
Cul-de-Sac	Serves as a dead-end local street with a turn-around at its terminus. Provides property access into areas of a neighborhood where continuous local street connections cannot be made.	Depends on number of properties served.	Maximum length is 800 feet. Must have turn-around at terminus. Improvement varies per SRC.	Shared roadway	Yes	Permitted	None	Stem shall correspond with respective local street standard. Turn-around requirements per Salem Revised Code and Street Design Standards.
Alleyway	Provides secondary property access and circulation within a city block.	Depends on number of properties served.	Improvement is wide enough to accommodate utilities, deliveries, emergency vehicles and off-street parking access.	Shared roadway	Optional	Deliveries Only	None	Minimum 16 feet - Maximum 20 feet.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: June 1, 2007 Project #: 7460.03

To: Judith Moore, City of Salem

Cc: Dick Loffelmacher, PacTrust
Eric Sporre, PacTrust
Jeff Tross
Wendie Kellington

From: Anthony Yi, P.E., Mark Vandehey, P.E., & Dave Daly

Project: PacTrust Kuebler Project
Subject: Response to City Council Traffic Related Questions

This memorandum provides staff with some additional information and insights addressing the transportation related questions raised by City Council. We hope that this information is helpful as you prepare your own responses to Council questions. Please let us know if you have any questions related to the information we have provided.

1) How much of the street improvements PacTrust will do that are required and how much of the street improvements is PacTrust being asked to do but would not be required to do to make the transportation system work better?

Response #1: The September 2006 TIA recommended several improvements to ensure adequate safety and operation of the surrounding transportation system under the proposed zone change. Based on conversations with City staff, the City of Salem has received authorization for federal funds towards improving Kuebler Boulevard from I-5 through Battle Creek Road. These are funded improvements on the City's Capital Improvement Program (CIP). The design phase for the *Kuebler Boulevard Improvement Project* is currently underway and project completion is expected in 2008 according to City staff. This improvement project includes the following:

- Add a second westbound travel lane, curb, and sidewalk from the I-5 southbound ramp terminal to approximately 1,600 feet west of Battle Creek Road.
- Add exclusive right-turn lanes along the northbound, southbound, and westbound approaches at the Kuebler Boulevard/Battle Creek Road intersection.
- Install a new traffic signal at the Kuebler Boulevard/27th Avenue intersection.
- Add a traffic signal interconnect along Kuebler Boulevard from the I-5 northbound ramp terminal to Commercial Street.

In addition the City's Kuebler Boulevard Project, PacTrust will be responsible for the following improvements that will not only meet the City's performance standard under build conditions, but will also improve overall operations of the transportation system.

- Provide an additional travel lane in the eastbound direction along Kuebler Boulevard from west of Battle Creek Road to the I-5 southbound ramp.
- Install a traffic signal at the Battle Creek Road/Boone Road intersection, provide exclusive left-turn lanes for both eastbound and westbound approaches, and provide an exclusive westbound right-turn lane.
- Construct a second westbound left-turn lane and an exclusive northbound right-turn lane (provide overlap phasing for this movement) at the Kuebler Boulevard/27th Avenue intersection.
- Re-stripe the I-5 southbound off-ramp approach to Kuebler Boulevard from a shared left/through lane to a shared left/through/right lane.
- Provide two egress lanes and one ingress lane at the access driveways along Boone Road and 27th Avenue.
- Maintain landscaping along the frontage of the property to ensure adequate sight distance at the access driveways.

Furthermore, if the proposed right-in only driveway on Kuebler Boulevard is approved by the City of Salem, PacTrust will be responsible for not only providing the right-in access driveway, but will also complete the widening of the eastbound travel lane of Kuebler Boulevard west to Commercial Street. Per City staff, this additional widening of Kuebler Boulevard is considered payment for a grant of access.

2) How can only 350 ft extra lane on Battle Creek and 300 ft extra lane on 27th SE handle additional traffic storage? This amount of distance is fairly minimal as a condition given the amount of traffic turning there now. What traffic counts at what day of week and time were used to calculate these stacking distances on these collector streets?

Response #2: As previously documented in the *November 14, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA,* a design concept was developed that can accommodate vehicle queues under build-out conditions, while maintaining acceptable intersection operations under year of opening conditions with the proposed CO/CR zoning scenario. The TIA took a very conservative approach and did not assume a right-in only driveway on Kuebler Boulevard. The reason for the long queues that are observed today at the Battle Creek Road/Kuebler Boulevard intersection is that the intersection is operating very near its design capacity during peak periods (recall that there is only one through lane in each direction on Kuebler Boulevard today). With the significant improvements to Kuebler Boulevard (an additional through lane in each direction), more green time can be allocated to the minor streets, including Battle Creek Road and 27th Avenue. The additional green time combined with the additional queue storage that will be constructed by PacTrust as part of their project will be sufficient to accommodate the queues on Battle Creek Road and 27th Avenue, even without the proposed right-in access to Kuebler Boulevard.

If the proposed right-in only driveway on Kuebler Boulevard is approved by the City of Salem, the amount of site-related traffic using Battle Creek Road will be reduced significantly. The reduced traffic using Battle Creek Road (particularly the southbound left-turn movement from Battle Creek Road to Boone Road) would create the opportunity to provide two northbound left-turn lanes from Battle Creek Road onto Kuebler Boulevard. This modification would both increase the capacity at the Battle Creek Road/Kuebler Boulevard intersection, and reduce the queues on Battle Creek Road.

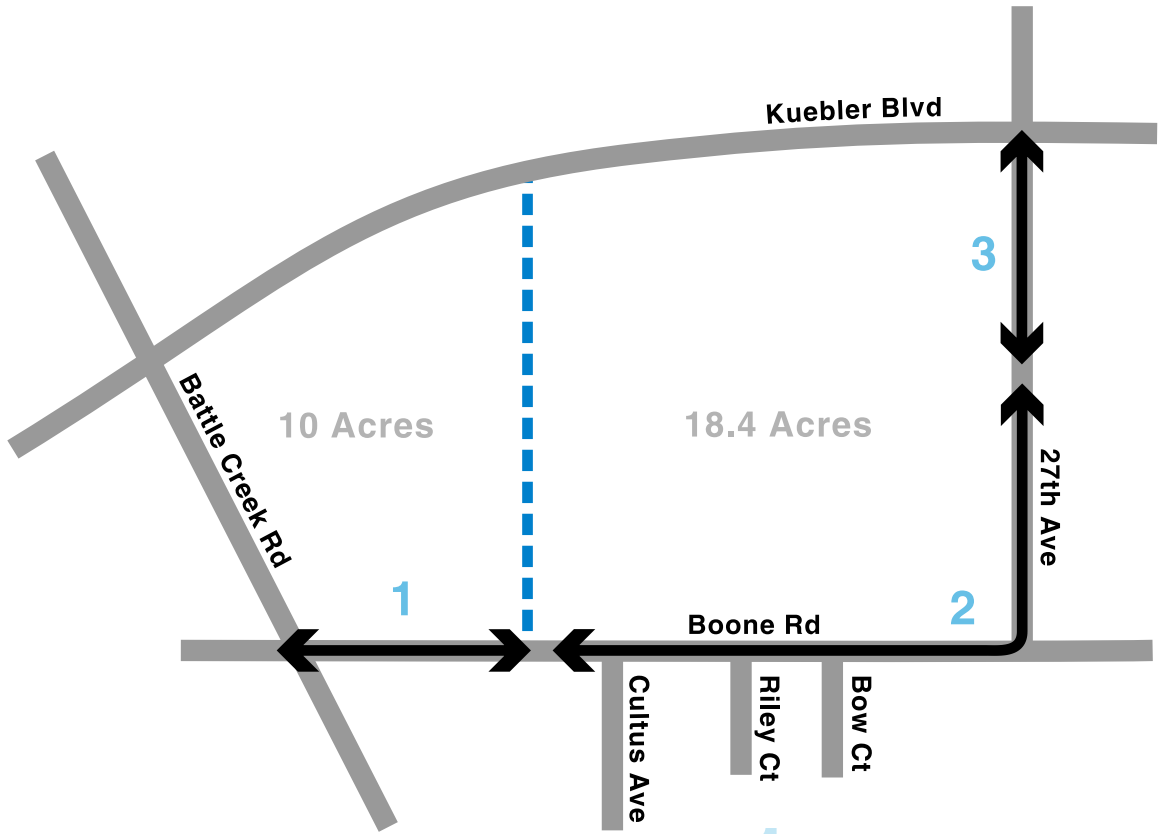
3) If the 18.4 acres developed as residential, what are the ADT or traffic count differences between what was calculated in the TIA?

Response #3: If the 18.4 acres are developed as residential, it is reasonable to assume that the remaining 10 acres would be developed as commercial (as it is designated in the Comprehensive Plan). The average daily traffic (ADT) on Boone Road and 27th Avenue should be evaluated in three distinct segments: 1) On Boone Road between Battle Creek Road and the eastern boundary of the church located on the south side of Boone Road**,** 2) Boone Road between the eastern boundary of the church and proposed site access on 27th Avenue, and 3) 27th Avenue between the proposed site access and Kuebler Boulevard. Figure 1 visually depicts these three locations.

If we assume 18 acres of residential and 10 acres of commercial and compare the ADT for the three segments shown in Figure 1, the ADT of the 18 acre residential/10 acre commercial is higher on segment 2 when compared to the PacTrust proposal. The reason for this is that the 18 acre site and the 10 acre site would not be connected with an internal roadway network. Accordingly, certain segments of Boone Road and 27th would be more heavily used for accessing the two individual sites. As shown in Figure 1, segment 2 includes the section of Boone Road that immediately fronts the existing residential neighborhood.

The PacTrust proposal allows for internal circulation throughout the entire 28.4 acre site and includes driveways on both Boone Road and 27th Avenue (located outside of segment 2). With these access locations and the opportunity for internal circulation, the site-related traffic can be accommodated on the segments of Boone Road (segment 1) and 27th Avenue (segment 3) that do not front the existing residential neighborhood. Furthermore, the PacTrust proposal identifies improvements to these segments that include separate left- and right-turn lanes.

If the proposed right-in only access on Kuebler Boulevard is approved by the City of Salem, the amount of site-related traffic will be reduced along segments 1 and 3 (see Figure 1, Proposed Zoning, Sept. 2006 TIA with Right-in Kuebler Access).



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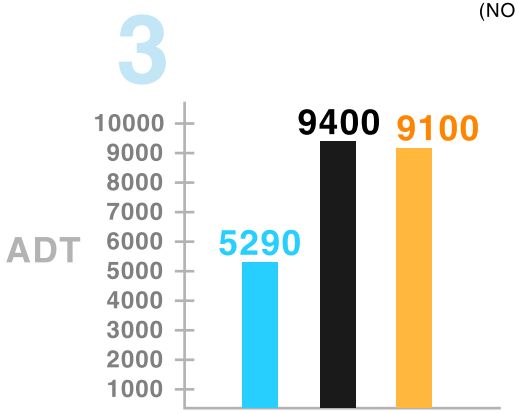

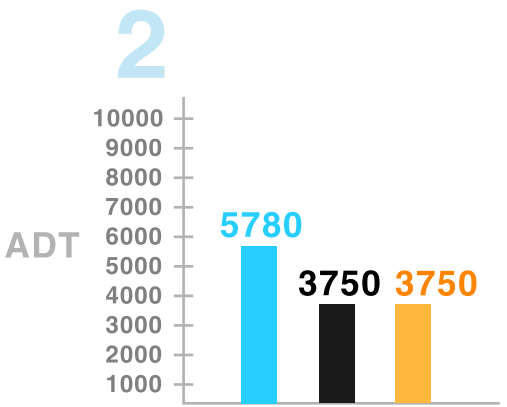

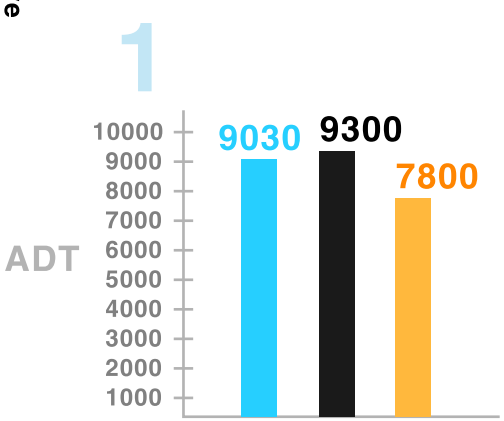

LEGEND

- 18 Acre Residential, 10 Acres Commercial
- Proposed Zoning, Sept. 2006 TIA (Pactrust)
- Proposed Zoning, Sept. 2006 TIA (Pactrust) with Right-in Kuebler Access

Estimated Average Daily Traffic (ADT)
Salem, Oregon

FIGURE 1

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4) What is the timeline and general scope of Kuebler Interchange Improvements? Will the increased ADT that the renovated interchange is designed for meet the additional ADT of this proposed amendment and the Mill Creek Industrial traffic?

Response #4: ODOT is currently in the design phase for an additional northbound ramp onto I-5 from Kuebler Boulevard. The Traffic Impact Analysis for the Mill Creek Industrial development identified several needed improvements at the interchange to accommodate build-out of Mill Creek. However, we were instructed not to assume any of the mitigation in our traffic impact analysis. However, ODOT is currently working on an Interchange Area Management Plan (IAMP) to address the future traffic demand at the interchange (including traffic demands from build-out of the Mill Creek Industrial Development). The IAMP is expected to be adopted sometime in the fall of 2007.

5) Could Council condition its approval to restrict ingress from Kuebler?

Response #5: Yes, Council could condition approval to restrict ingress from Kuebler Boulevard. A more appropriate question would be why would the Council want to restrict access from Kuebler Boulevard? As illustrated in the September 2006 TIA, the right-in only access from eastbound Kuebler Boulevard into the site, will help to reduce traffic at the Battle Creek Road/Boone Road intersection and help to accommodate a dual northbound left turn lane at the Kuebler Boulevard/Battle Creek Road intersection, which will significantly improve operations at that intersection. The design of the right-in access would allow right-turning traffic to entering the site without any significant impact to through traffic on Kuebler Boulevard. The right-in access results in a net benefit to through traffic on Kuebler Boulevard, Battle Creek Road and Boone Road.

6) Can a neighborhood shopping center have access from a parkway? If so, does this one assume such access? What happens if the State does not allow such access and we approved based on that access? Can we condition the approval on getting access from Kuebler?

Response #6: Although the City of Salem Transportation System Plan provides basic design guidelines for street classifications, including parkways, no standards prohibit access on a Parkway. Furthermore, although not a standard but rather a policy referent, the City of Salem *Design Standards for Access Management on Collectors, Arterials, and Parkways* states that permitted access uses to a Parkway include public or private developments generating traffic volumes of 10,000 or more vehicles per day. The estimated trip generation of 14,270 daily trips under the proposed zoning scenario exceeds the 10,000 vehicles per day threshold referenced in the policy document and therefore justifying an access. The State does not control access to this facility.

7) Is bringing a street up to an adequate LOS a condition for approval of a comp plan/zone change?

Response #7: No. The development is responsible for mitigating the impacts of its traffic, which have been previously identified. Specifically, a comp plan/zone change proposal must satisfy Oregon Administrative Rules (OAR) Division 51 – Transportation Planning Rule (TPR).

8) Was the TIA done looking at the highest impact allowed land uses in the zone, not the proposed uses? Has the TIA looked at impact both pre and post amendment to the SACP? Has the TIA assumed the most intensive use allowed after the zone/comp plan change?

Response #8: The TIA was completed by comparing the existing SACP zoning scenario with that of the "reasonable worst case scenario" as defined by the ODOT Development Review Guidelines. For the purposes of the proposed zoning, a shopping center land use was agreed upon by both ODOT and City staff as an appropriate "reasonable worst case scenario". Furthermore, PacTrust is willing to accept a condition of approval that limits the size of its community retail shopping center development for the 18.4 acres to 240,000 square feet.

9) What day(s) was the traffic count done?

Response #9: The manual turning movement counts were collected during mid-week days (Tuesday-Thursday), consistent with ODOT and City guidelines accepted traffic engineering principles. In addition, there is correspondence in the formal record from the City of Salem, ODOT and DKS Associates confirming the use of the traffic forecasts for this project.

10) Is the off set of the driveway along Boone Rd. at Cultus a condition for approval? If not, why did the PC not make it so? Can we make it a condition?

Response #10: No. The offsetting of the Cultus Avenue driveway was completed to address neighborhood concerns raised in a previous SGNA meeting.

11) Was the TIA done assuming access from Kuebler? Was the TIA done assuming highest allowed uses at full build out, including future expansion?

Response 11: Yes, the TIA was completed assuming two access scenarios, with and with out access from Kuebler Boulevard. Yes, the TIA was completed assuming the highest allowed uses under the proposed zoning scenario.

12) Describe the difference between the first and second TIA submitted to ODOT.

Response #12: The first TIA submitted to ODOT and the City assumed a development scenario consisting of 350,000 square feet of shopping center space. This scale of development is large enough in relation to the property size such that structured parking would be required to accommodate the development. After meeting with ODOT and City staff, it was realized that the scale of proposed development would not represent a reasonable worst case scenario, particularly in relation to how the development fits with the surroundings. As part of scaling back the overall size to 290,000 square feet, several changes were made to address neighborhood and City concerns with regard to forecast traffic volumes and site access locations.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: June 6, 2007 Project #: 7460.03

To: Judith Moore, City of Salem

Cc: Dick Loffelmacher, PacTrust
Eric Sporre, PacTrust
Jeff Tross
Wendie Kellington

From: Anthony Yi, P.E., Mark Vandehey, P.E., & Dave Daly

Project: PacTrust Kuebler Project
Subject: Response to Mr. John Miller Traffic Related Questions

This memorandum responds to questions prepared by John Miller (*Attachment "A" – May 12, 2007 Zone Change/Comprehensive Plan Change 6-06 letter prepared by John Miller*) related to the PacTrust plan amendment and zone change application. This memorandum provides the question in *italics* and provides our response in standard text.

Are the traffic counts submitted by DKS Associates credible and relevant?

Response #1: Comments prepared by DKS Associates (December 5, 2006 DKS Associates' memorandum) were submitted to the Planning Commission during the open record time at the end of the November 21, 2006, Public Hearing. The DKS Associates' memorandum stated that DKS recently obtained traffic counts at the study intersections and compared them to the traffic counts used in the September 2006 TIA. There is a basic flaw with the DKS counts that makes them unreliable. The traffic counts obtained by DKS Associates were collected on Friday, December 1, 2006, one week after the Thanksgiving holiday, and therefore do not represent typical weekday data. For these reasons the DKS Associates' data cannot be relied upon for the purpose of assessing the validity of the traffic volume data used in the September 2006 TIA. As stated in the ODOT APM, "In general, days potentially influenced by state or federal holidays or other significant events that may alter normal traffic patterns should be avoided." Furthermore, the APM also explains, "It is common to avoid Monday and Friday counts when weekday data is desired, as the trip characteristics on these days generally differ from the remainder of the week." The traffic counts obtained by DKS Associates that were collected on Friday, December 1, 2006 (one week after the Thanksgiving holiday) resulted in higher traffic levels than those used in the September 2006 TIA, which utilized traffic count data collected on a typical weekday (Thursday).

Would the traffic on 27th Avenue exceed 10,000 ADT?

Response #2: As discussed fully in the December 19, 2006 *Supplemental to the September 2006 PacTrust Kuebler Project TIA* prepared by Kittelson & Associates, Inc. (KAI), under the PacTrust proposed plan and zoning proposal, the ADT levels under build-out conditions along all segments of Boone Road and 27th Avenue are forecast below 10,000 vehicles per day. Under long-term 2025 conditions, the forecast ADT along 27th Avenue between Kuebler Boulevard and the proposed 27th Avenue site driveway (estimated 10,800 ADT) are estimated near the design guideline of 10,000 ADT. This short segment of 27th Avenue does not front any residential homes and improvements are proposed at this location to accommodate near and long-term traffic demands (for a more detailed discussion see pages 2-3 of the December 19, 2006 supplemental memorandum).

What is the significance of Kittelson and Associates utilizing Highway 22 for a seasonal adjustment basis to compensate for their summer counts?

Response #3: Historical traffic data obtained from the ODOT automatic traffic recorder (ATR) along ORE 22 were not used to develop a seasonal adjustment factor to modify the July 2005 counts.

As discussed fully in the KAI December 19, 2006 supplemental memorandum, traffic data collected at the ODOT ATR located along ORE 22 was used to address a comment raised by DKS Associates regarding monthly seasonality. The December 5, 2006 DKS Associates' memorandum states that the July traffic counts "…were collected in the summer when traffic volumes are typically lower." The assumption that July 2005 counts are "typically lower" is wrong and the historical traffic data collected at the ODOT ATR on *both sides* of I-5 were used to address this issue (for a more detailed discussion see pages 1-2 of the December 19, 2006 supplemental memorandum).

Is a 2007 build-out possible?

Response #4: As documented in the September 2006 *PacTrust Kuebler Project Traffic Impact Analysis (TIA)*, the build-out year was assumed as 2007. Although a build-out year of 2007 was reasonable to assume at the time of preparing the TIA, the overall process to coordinate this Comprehensive Plan Amendment and Zone Change request with both jurisdictional staff and the public has lead toward a more likely build-out year of 2008 or 2009. As such, a revised traffic operations analysis was performed under proposed build out year of 2009.

Year 2009 total traffic volumes were developed by applying an annual growth rate of 2 percent to the proposed zoning 2007 total traffic volumes, which is consistent with the growth rate used in the September 2006 TIA.

Because the 2007 total traffic volumes include both background traffic volumes and site-generated traffic, applying a growth factor directly to the 2007 total traffic volumes is a very conservative approach.

Both the weekday p.m. peak hour and Saturday Midday peak hour were checked assuming the 2009 build-out conditions. The weekday p.m. peak hour represents the critical time period for analysis, as it experiences higher overall traffic volumes on the street network.

As a supplemental sensitivity check, additional traffic volumes at each study intersection were collected in March 2007. These base volumes were compared to the 2005 base volumes, and found to have an overall increase in traffic volume that is slightly lower than the 2007 background volumes from the September 2006 TIA. This comparison suggests that the methodology and assumptions used to determine background traffic in the TIA are valid and conservative.

Assuming year 2009 build out conditions, all the study intersections are forecast to operate acceptably assuming completion of the City of Salem Kuebler Boulevard Widening Project and additional improvements identified in the September 2006 TIA and November 2006 Supplemental Memorandum. It is reasonable to assume the City of Salem Kuebler Widening Project will be constructed within the near-term, as this project is included on the City's Capital Improvement Program (CIP), referenced in the Transportation System Plan (TSP) and currently under design.

The proposed development and associated transportation improvements will serve to fully mitigate the increase in traffic demand resulting from the Comprehensive Plan Amendment and Zone Change for both the near term (2009) and long term (2025) conditions.

As discussed fully in the September 2006 TIA, the proposal satisfies the requirements of the Transportation Planning Rule (TPR) (for a more detailed discussion see pages 42-45 of the September 2006 TIA). On this ODOT and City transportation staff all agree based on the documentation received from these agencies.

Attachment A

May 12, 2007 John Miller Letter

John D. Miller

4985 Battlecreek Rd. SE Salem, Oregon 97302 phone (503) 363-9136 fax (503) 363-2358 email: wildwoodco@aol.com

DATE: May 12, 2007

TO: Salem Mayor and City Council

FROM: John Miller, A.I.C.P. JDM

RE: Zone Change/Comprehensive Plan Change 6-06

As requested by Councilor Stuckey, I am submitting copies of the Power Point slides I presented to you on May 7th. I have enclosed them in an 11"x17" copy of Alternative 1c to which I have added comments, in blue, which highlight some of the features of this compromise proposal. Although the first choice at the SGNA General Meeting of May 3, 2007 was for denial of the PacTrust proposal, the overwhelming majority of the 100 members present voted that 1c be adopted if any Zone Change/Comprehensive Plan Change is granted. Many of us believe that such an action would leave a legacy that would include a widened Kuebler functioning long into the future and livable neighborhoods.

Here are a few questions for your consideration as you request additional information from Staff:

1. It appears that the conditions recommended by the Planning Commission and staff would not limit scale or size of development; thus, "Super Center" retailers or a regional scale mall could be built on CR zoned property at this location. Large-scale commercial facilities (e.g. "Big Box retailers") are controlled in other communities by zoning overlays that limit maximum square footage of buildings to 60,000 sq. ft. in certain areas. Could the same result be accomplished through the adoption of a Conditional Zone change relating to maximum building size and total square footage such as those included in Alternative 1c?

2. Are the traffic counts submitted by DKS Associates credible and relevant? Would the traffic on 27th Avenue exceed 10,000 ADT? What is the significance of Kittleson and Associates utilizing Highway 22 for a seasonal adjustment basis to compensate for their summer counts? Is a 2007 build-out possible?

3. Do the reimbursement calculations supplied by Westech Engineering that indicate a potential reimbursement to PacTrust for traffic improvements of up to $1.5 Million dollars reflect City policy?

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

MEMORANDUM

Date: June 25, 2007 Project #: 7460.03

To: City Council

Cc: Dick Loffelmacher, PacTrust
Eric Sporre, PacTrust
Jeff Tross
Wendie Kellington

From: Anthony Yi, P.E., Mark Vandehey, P.E., & Dave Daly

Project: PacTrust Kuebler Project

Subject: Response to Public Comments from the June 11th Public Hearing

REGISTERED PROFESSIONAL ENGINEER
59948PE
OREGON
July 12, 2005
ANTHONY S. YI
EXPIRES: 6/30/2008

This memorandum responds to public comments provided at the June 11, 2007 Public Hearing and written comments received during the open record period as it relates to traffic. The remainder of this memorandum highlights opponents' issues and provides our response.

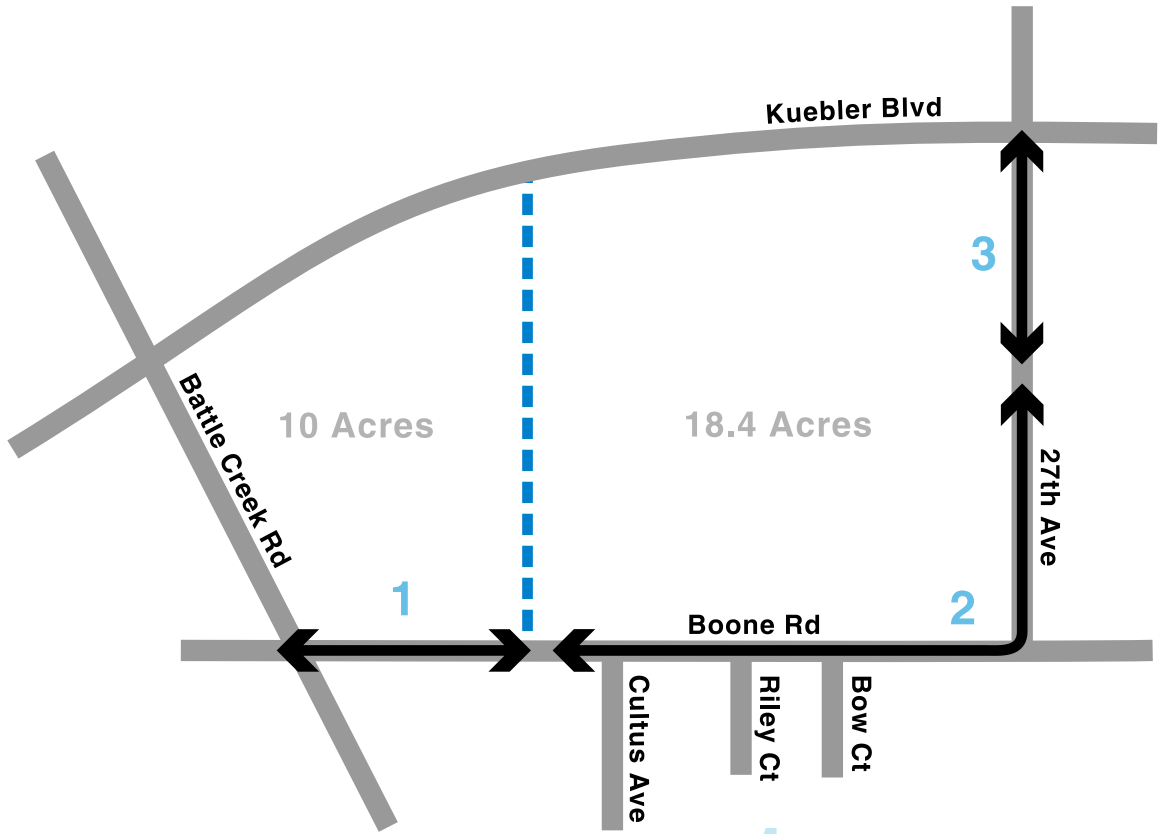
Breakdown of Year 2025 Forecast Traffic Volumes

Figure 1 illustrates the key elements contributing to the year 2025 traffic volumes. The traffic volumes shown at several key study intersections are total entering traffic volumes for the weekday p.m. peak hour. As shown, the estimated trips generated by the proposed PacTrust rezone scenario is less than 10 percent of the year 2025 total traffic volumes at any intersection.

July Traffic Counts

As previously addressed in memorandums to the City of Salem and Planning Commission, the traffic volumes used in the September 2006 TIA were determined using accepted engineering principles for collecting and analyzing this data. Evidence that the counts were properly collected and analyzed is that the traffic counts were accepted and approved by both the City of Salem and ODOT staff. The dates on which the manual turning movement counts were collected (summer of July) are consistent with accepted engineering principles and the requirements of the ODOT Analysis Procedures Manual (APM) dated April 2006 (page 3-8).

Also, although many schools are not in session during the summer months, the traffic analysis analyzed peak time periods when schools are not typically in operation or their traffic flows are not at their peaks (weekday p.m. peak hour and Saturday midday peak hour).



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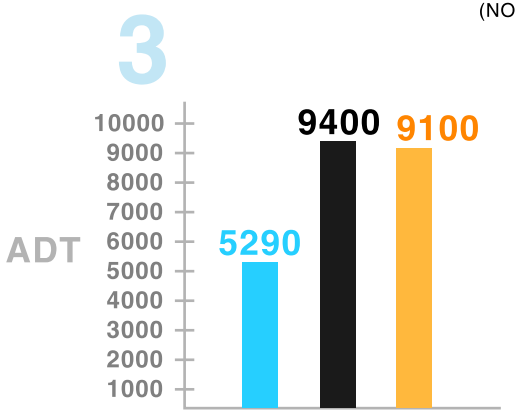

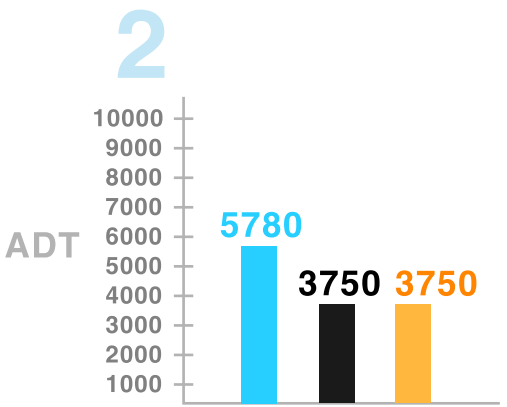

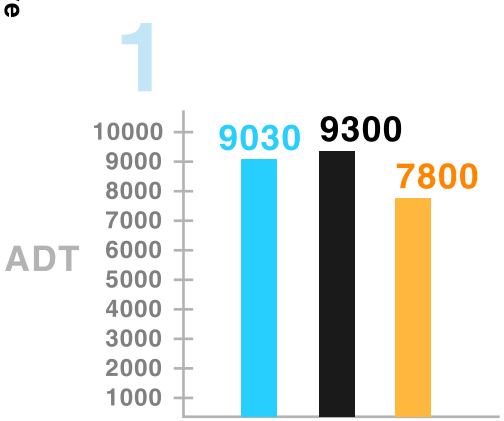

LEGEND

- 18 Acre Residential, 10 Acres Commercial
- Proposed Zoning, Sept. 2006 TIA (Pactrust)
- Proposed Zoning, Sept. 2006 TIA (Pactrust) with Right-in Kuebler Access

Estimated Average Daily Traffic (ADT)
Salem, Oregon

FIGURE 1

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For previous responses to the traffic count issue see the following memorandums.

- November 14, 2006, *Supplemental to the September 2006 PacTrust Kuebler Project TIA*, pages 10 and 11.
- December 4, 2006, *Response to Public Comments from the November 21st Public Hearing*, pages 1 and 2.
- December 19, 2006, *Supplemental to the September 2006 PacTrust Kuebler Project TIA*, pages 1 and 2.
- June 1, 2007, *Response to City Council Traffic Related Questions*, page 6.
- June 6, 2007, *Response to Mr. John Miller Traffic Related Questions*, page 2.

Comparison of Traffic Count Information

City of Salem staff conducted an independent review of the traffic count information obtained by DKS Associates, Inc., and the results are summarized in the June 18, 2007 memorandum (Attachment "A"). In summary, the City determined that using the DKS traffic counts would not have an effect on the overall transportation improvements needed and that no additional improvements would be needed beyond those identified as conditions of approval by the Planning Commission.

Year of Opening

As documented in the September 2006 PacTrust Kuebler Project Traffic Impact Analysis (TIA), the build-out year was assumed as 2007. Although a build-out year of 2007 was reasonable to assume at the time of preparing the TIA, the overall process to coordinate this Comprehensive Plan Amendment and Zone Change request with both jurisdictional staff and the public has lead toward a more likely build-out year of 2008 or 2009. As such, a revised traffic operations analysis was performed under proposed build out year of 2009.

Year 2009 total traffic volumes were developed by applying an annual growth rate of 2 percent to the proposed zoning 2007 total traffic volumes, which is consistent with the growth rate used in the September 2006 TIA.

Because the 2007 total traffic volumes include both background traffic volumes and site-generated traffic, applying a growth factor directly to the 2007 total traffic volumes is a very conservative approach.

Both the weekday p.m. peak hour and Saturday Midday peak hour were checked assuming the 2009 build-out conditions. The weekday p.m. peak hour represents the critical time period for analysis, as it experiences higher overall traffic volumes on the street network.

As a supplemental sensitivity check, additional traffic volumes at each study intersection were collected in March 2007. These base volumes were compared to the 2005 base volumes, and found to have an overall increase in traffic volume that is slightly lower than the 2007 background volumes from the September 2006 TIA. This comparison suggests that the methodology and assumptions used to determine background traffic in the TIA are valid and conservative.

Assuming year 2009 build out conditions, all the study intersections are forecast to operate acceptably assuming completion of the City of Salem Kuebler Boulevard Widening Project and additional improvements identified in the September 2006 TIA and November 2006 Supplemental Memorandum. It is reasonable to assume the City of Salem Kuebler Widening Project will be constructed within the near-term, as this project is included on the City's Capital Improvement Program (CIP), referenced in the Transportation System Plan (TSP) and currently under design.

The proposed development and associated transportation improvements will serve to fully mitigate the increase in traffic demand resulting from the Comprehensive Plan Amendment and Zone Change for both the near term (2009) and long term (2025) conditions.

As discussed fully in the September 2006 TIA, the proposal satisfies the requirements of the Transportation Planning Rule (TPR) (for a more detailed discussion see pages 42-45 of the September 2006 TIA). On this ODOT and City transportation staff all agree based on the documentation received from these agencies.

Battle Creek Road Traffic Operations

As previously documented in the *November 14, 2006 Supplemental to the September 2006 PacTrust Kuebler Project TIA,* a design concept was developed that can accommodate vehicle queues under build-out conditions, while maintaining acceptable intersection operations under year of opening conditions with the proposed CO/CR zoning scenario. The TIA took a very conservative approach and did not assume a right-in only driveway on Kuebler Boulevard. The reason for the long queues that are observed today at the Battle Creek Road/Kuebler Boulevard intersection is that the intersection is operating very near its design capacity during peak periods (recall that there is only one through lane in each direction on Kuebler Boulevard today). With the significant improvements to Kuebler Boulevard (an additional through lane in each direction), more green time can be allocated to the minor streets, including Battle Creek Road and 27th Avenue. The additional green time combined with the additional queue storage that will be constructed by PacTrust as part of their project will be sufficient to accommodate the queues on Battle Creek Road and 27th Avenue, even without the proposed right-in access to Kuebler Boulevard.

If the proposed right-in only driveway on Kuebler Boulevard is approved by the City of Salem, the amount of site-related traffic using Battle Creek Road will be reduced significantly. The

reduced traffic using Battle Creek Road (particularly the southbound left-turn movement from Battle Creek Road to Boone Road) would create the opportunity to provide two northbound left-turn lanes from Battle Creek Road onto Kuebler Boulevard. This modification would both increase the capacity at the Battle Creek Road/Kuebler Boulevard intersection, and reduce the queues on Battle Creek Road.

Queuing Analysis

A 95th percentile queuing analysis, based on SimTraffic, was performed as part of the 2009 sensitivity analysis for the section of Battle Creek Road between Kuebler Boulevard and Boone Road to ensure that adequate vehicle storage will be available when the site is fully built.

The queuing analysis was performed for the following three lane configuration options for Battle Creek Road:

- **Option 1:** Side-by-side left turn lanes on Battle Creek Road and no right-in only access to the site from Kuebler Boulevard.
- **Option 2:** Same as Configuration 1, but includes a right-in only access to the site from Kuebler Boulevard (Planning Commission and City of Salem condition of approval).
- **Option 3:** Right-in only access to the site from Kuebler Boulevard and dual northbound left-turn lanes from Battle Creek Road to Kuebler Boulevard.

Table 1 summarizes the results of the queuing analyses for the proposed zoning under full site build-out traffic conditions for the weekday p.m. peak hour.

Table 1
Estimated 95th Percentile Queue Lengths

Intersection	Movement	Estimated Queue 95th Percentile Queue Length	Available Storage	Adequate Storage?
Option 1				
Kuebler Blvd/Battle Creek Rd	NB LT	275	350	Yes
	NB TH	150	400	Yes
	NB RT	100	100	Yes
Boone Road/Battle Creek Road	SB LT	200	325	Yes
	SB TH/RT	150	400	Yes
Option 2				
Kuebler Blvd/Battle Creek Rd	NB LT	300	350	Yes
	NB TH	175	400	Yes
	NB RT	100	100	Yes
Boone Road/Battle Creek Road	SB LT	75	325	Yes
	SB TH/RT	200	400	Yes
Option 3				
Kuebler Blvd/Battle Creek Rd	NB LT	175	200	Yes
	NB TH	175	400	Yes
	NB RT	100	100	Yes
Boone Road/Battle Creek Road	SB LT	100	125	Yes
	SB TH/RT	225	400	Yes

As shown in Table 1, the queuing analyses determined that sufficient lane storage will exist on Battle Creek Road between Kuebler Boulevard and Boone Road with proposed off-site transportation improvements in place, with and without the proposed right-in only driveway on Kuebler Boulevard. Attachment "B" contains the queuing analysis summary worksheets.

Boone Road and 27th Avenue Traffic Levels

The City provides "basic design guidelines" for average daily traffic (ADT) levels for all roadway classifications. Boone Road and 27th Avenue are classified as collectors. Per the "basic design guidelines" for a collector street, the Salem TSP provides a design ADT range between 1,600 to 10,000 vehicles per day. The City's "basic design guidelines," which includes design guidelines other than ADT range, are elements that provide guidance for each roadway classification, but do not represent required thresholds that define a roadway's form and function, particularly around traffic levels that are near the upper and lower ranges of two classifications. Accordingly, the ADT "guideline" cannot be used as an approval criteria for this application.

Under the PacTrust proposed plan and zoning proposal, the ADT levels under 2007 build-out conditions along all segments of Boone Road and 27th Avenue are forecast below 10,000 vehicles per day. Under long-term 2025 conditions, the forecast ADT along Boone Road between Battle Creek Road and the proposed Boone Road site driveway (estimated 10,650 ADT) and along 27th Avenue between Kuebler Boulevard and the proposed 27th Avenue site driveway (estimated 10,800 ADT) are estimated near the design guideline of 10,000 ADT. These two short segments of Boone Road and 27th Avenue do not front any residential homes and improvements are proposed at both locations to accommodate near and long-term traffic demands.

For previous responses to the Boone Road and 27th Avenue traffic level issue, see the following memorandums.

- December 19, 2006, *Supplemental to the September 2006 PacTrust Kuebler Project TIA*, pages 2 and 3.
- June 1, 2007, *Response to City Council Traffic Related Questions*, page 3.
- June 6, 2007, *Response to Mr. John Miller Traffic Related Questions*, page 2.

Miller's Alternative Development Scenario

An alternative development scenario was presented by John Miller at the June 11, 2007 City Council Hearing and was previously submitted to the Planning Commission during the open record time at the end of the November 21, 2006, Public Hearing. Table 2 provides a comparison of estimated trip generation between the PacTrust and Wildwood, Inc. (John Miller) development scenarios.

Table 2
Comparison of Estimated Trip Generation

Development Scenario		Daily Trips	Weekday PM Peak Hour Trips	Saturday Midday Peak Hour Trips
PacTrust	Shopping Center - 290,000 s.f. Medical/Dental Office – 24,000 s.f.	9,660	900	1,350
Wildwood, Inc. [1]	Shopping Center - 244,000 s.f. Medical/Dental Office – 24,000 s.f. Single-Family Detached Housing – 92 units	9,410	885	1,285
Difference in Net New Trips		**250**	**15**	**65**
Percent Difference		**2.7 %**	**1.7 %**	**5.1 %**

[1] Development scenario submitted by Wildwood, Inc.

A comparison of estimated trip generation between the PacTrust proposal and the development plan prepared by Wildwood, Inc. results in less than a 3-percent difference in net new daily trips. In other words, the opponents proposed development scenario and what PacTrust proposes, have nearly identical trip impacts with PacTrust's scenario having

250 more daily trips, 15 more weekday p.m. peak hour trips, and 65 more Saturday midday peak hour trips. Under these conditions, this is an insignificant variation for transportation analysis and planning. Based on this comparison, the Wildwood, Inc. proposal would very likely need the same level of transportation improvements as the PacTrust proposal. There is no functional transportation related difference between the two scenarios.

Trip Generation: Development Size and Building Sizes

The trip generation estimate for the proposed zoning scenario was derived from empirical observations summarized in the standard reference manual, *Trip Generation, 7th Edition*, published by the Institute of Transportation Engineers (ITE). For the purposes of the proposed zoning, a shopping center land use was agreed upon by both ODOT and City staff as an appropriate "reasonable worst case scenario".

Per the ITE Trip General Manual, a "shopping center" is comprised of a group of commercial establishments. Trip generation for a shopping center is based on total development size and is not dependant on the number of commercial establishments or specific individual building sizes. Therefore, when applying the ITE trip generation methodology for a shopping center, a 290,000 square-foot shopping center comprised of one major retail tenant and several smaller tenants is assumed to generate the same number of vehicle trips as a 290,000 square-foot shopping center comprised of several small retail establishments.

Pedestrian / Bicycle Accessibility

As documented in previous memorandums to the City of Salem and Planning Commission, the Applicant is proposing improvements to help alleviate congestion within the study area and improvements to promote safe and efficient site access and circulation for non-auto modes of travel. Pedestrian/bicycle access to/from the site and destinations north of Kuebler Boulevard will be accommodated by the signalized intersections crossing at the Battle Creek Road and 27th Street intersections.

In a letter prepared by Sherman Sherman Johnnie & Hoyt, LLP dated June 8, 2007, the opponents state that "the Council could require some type of pedestrian/bike bridge as a condition of approval." However, as stated by City of Salem staff in their response to questions raised by the City Council:

> Such a bridge cannot be a condition of approval unless the amount of pedestrian and bike traffic caused by the development made it evident that the two signalized intersection crossings would not be adequate for the pedestrians and bicycles crossing Kuebler Boulevard. (June 11, 2007 City of Salem letter, page 10)

As previously documented, both of these signalized intersections will be improved by funded City improvements and the Applicant, and are forecast to operate acceptably under buildout conditions.

Traffic Calming

Opponents raised the issue of needed traffic calming along neighboring residential streets due to a condition for $5,000 for traffic calming. In a letter prepared by Sherman Sherman Johnnie & Hoyt, LLP dated June 8, 2007, the opponents state the "rational for the $5,000 for traffic calming devices is inherently linked to the significant traffic that may be filtered from the proposed development through the nearby residential streets in an attempt to avoid more congested areas such as Kuebler Boulevard."

As previously addressed in the November 14, 2006 *Supplemental to the September 2006 PacTrust Kuebler Project TIA* memorandum, several measures are planned to reduce neighborhood impacts. In addition to the planned and funded City improvements along Kuebler Boulevard, the Applicant is proposing roadway improvements to help alleviate congestion within the study area. The site access and circulation plan has also been developed to improve vehicular access into the site and reduce traffic along the segment of Boone Road that fronts the adjacent neighborhood to the south. Traffic calming along any residential street has never been identified as being necessary to support the zone change by any traffic study or jurisdictional staff. However, as previously stated the Applicant is willing to commit funds toward the City of Salem Neighborhood Traffic Management Program for neighborhood traffic calming devices should any traffic calming measures be needed in any of the surrounding neighborhoods.

Also, as stated by City of Salem staff in their response to questions raised by the City Council:

> The site access and circulation plan for the proposed development is intended to minimize traffic impact on the neighborhood to the south. When preparing proposed conditions, Public Works did not foresee a neighborhood cut-through traffic problem but wanted to ensure that some funds were available in case a problem was identified. (June 11, 2007 City of Salem letter, page 10)

Attachment A

June 18, 2007
City of Salem Memorandum

FOR COUNCIL MEETING OF: June 18, 2007
AGENDA ITEM NO.: 6 (a)

TO: MAYOR AND CITY COUNCIL

THROUGH: ROBERT G. WELLS, CITY MANAGER

FROM: VICKIE HARDIN WOODS, DIRECTOR
COMMUNITY DEVELOPMENT DEPARTMENT

SUBJECT: COUNCIL REVIEW OF PLANNING COMMISSION DECISION - COMPREHENSIVE PLAN CHANGE/ZONE CHANGE 06-6; PACIFIC REALTY ASSOCIATES, L.P. - 2500 BLOCK OF BOONE ROAD SE - STAFF RESPONSE TO "VICINITY" CRITERIA AND TRAFFIC COUNT ISSUES

BACKGROUND

At the June 11, 2007 City Council continued public hearing, City Council requested staff to provide information about (1) information about interpretation required to make a decision, (2) how traffic count information compares between Kittelson & Associates, Inc. (applicant) and DKS Associates and whether the difference in that information justifies further improvements, and (3) the use of "major arterial" in the Salem Area Comprehensive Plan (SACP), Policy IV(g)(4). The following information responds to the first and second issues. The Legal Department will provide a discussion of the third issue under separate cover.

(1) COMPREHENSIVE PLAN CHANGE CRITERIA

There are no interpretations needed to determine whether the applicant meets the applicable criteria for a Comprehensive Plan change. For the proposal to be approved, however, there are separate Comprehensive Plan Change criteria that must be met. These criteria place the burden of proof on the applicant. The staff report contains comprehensive evaluations of all criteria.

Salem Revised Code (SRC) 64.090 provides the criteria for Minor Plan Changes (quasi-judicial Comprehensive Plan Changes) as in the case of this request. SRC 64.090(b) states:

Before making any minor change the City Council shall be satisfied that the following criteria are met:

(1) A lack of **appropriately designated suitable alternative sites** within the **vicinity** for a proposed use. Factors in determining the suitability of the alternative sites are limited to one or both of the following:

(A) Size: Suitability of the size of the alternative sites to accommodate the proposed use; or

(B) Location: Suitability of the location of the alternative sites to permit the proposed use.

(2) This criterion is inapplicable.

(3) The proposed plan change considers and accommodates as much as possible all applicable statewide planning goals; and

(4) The proposed change is **logical and harmonious** with the land use pattern for the greater area as shown on the detailed and general plan maps; and

(5) The proposed change conforms to all criteria imposed by applicable goals and policies of the comprehensive plan in light of its intent statements; and

(6) The proposed change **benefits the public.**

(2) COMPARISON OF TRAFFIC COUNT INFORMATION

Compare the DKS traffic count information and whether that justifies further improvements at the two intersections and the two collector streets (Battle Creek and Boone Road SE).

City Traffic Count Guidelines for TIAs

City of Salem Transportation Impact Analysis Guidelines do not specify what time of year or which day of the week the counts must be obtained. The a.m. and p.m. peak hours are intended to represent average weekday rush hour traffic. It is general practice to avoid Mondays and Fridays as well as days that are not typical due to holidays and special events. For a.m. peak hour counts in urban areas it is advisable to count intersections when school is in session. During the p.m. peak hours, school traffic does not usually occur in the peak hour so school operation is not usually a factor. For the subject intersections the peak hour was found to be from 4:45 to 5:45 p.m.

Intersection of Battle Creek Road SE and Boone Road SE

The table below summarizes the differences in traffic counts

P.M. Peak Traffic Count Comparison at Battle Creek and Boone Roads SE

Consultant	Date of Count	Day of Week	Peak Hour Volume	Difference (%)
Kittelson	7/14/2005	Thursday	964	baseline
DKS	12/1/2006	Friday	1115	+16%

DKS Counts were about 16 percent higher. The increased volumes were mostly in the northbound, eastbound and southbound directions. No explanation is provided for the higher counts from DKS. However, counts obtained on a Friday are not usually considered representative of average weekday p.m. peak hour volumes.

If the DKS counts were used in the analysis, then the proposed improvements at this intersection would be adequate. The proposed mitigation includes a new traffic signal, eastbound and westbound left-turn lanes and a westbound right-turn lane. Currently the intersection is unsignalized and the traffic on Boone Road experiences significant delay (average 37.4 seconds, level of service [LOS] E, V/C= 0.73) during the peak hour. With the proposed improvements and PacTrust development traffic, the intersection will operate at LOS C with an average delay of 21.9 seconds. The Volume/Capacity (V/C) Ratio is 0.49. This means the intersection is capable of handling twice the estimated traffic volumes. If intersection volumes were actually 16 percent higher than assumed in the TIA, the intersection would still operate at LOS C and average delay would still be less than 23 seconds. (Source: PacTrust TIA 10/5/06 & 11/14/06, DKS Memorandum 12/5/06, additional analysis by City Staff).

Intersection of 27th Avenue and Kuebler Boulevard

P.M. Peak Traffic Count Comparison at 27th Avenue SE & Kuebler Boulevard SE

Consultant	Date of Count	Day of Week	Peak Hour Volume	Difference %
Kittelson	7/14/2005	Thursday	2223	baseline
DKS	12/01/2006	Friday	2435	+10%

At the intersection of 27th Avenue and Kuebler Boulevard, DKS counts were about 10 percent higher. The increased volumes were mostly in the eastbound, northbound right-turn and westbound left-turn movements. As stated before, Friday counts are typically not considered representative of average weekday peak hour volumes.

The proposed improvements at this intersection include a traffic signal and a westbound through lane that will be constructed by the City. The developer will be required to construct an additional eastbound through lane, a northbound right-turn lane and double westbound left-turn lanes. With all these improvements and traffic from the proposed development, the intersection will operate at LOS C with an average delay of 21.8 seconds and a V/C ratio of 0.54. These improvements result in a significant reserve capacity for future traffic growth (only 54 percent of the available capacity is being used). If we assumed traffic volumes entering this intersection were 10 percent higher, then intersection average delay would be about 23 seconds, LOS would not change, and the V/C ratio will increase to 0.59.

In the general discussion of the effect of the base traffic counts on the analysis, one must understand that the transportation impact and resulting mitigation are directly related to the development trip generation, not the base traffic counts. If base traffic counts are higher, then existing intersection conditions would appear worse, yet the developer is typically required to mitigate to existing conditions, therefore, the mitigation would be about the same. **In this case, there is no question that the developer is mitigating their impact and providing additional capacity as well.**

Intersection of Battle Creek Road and Kuebler Boulevard

City Staff would also like to mention the intersection of Battle Creek Road and Kuebler Boulevard. This intersection of a Minor Arterial and Parkway is an important junction in southeast Salem. Significant improvements will be needed to meet long-term traffic needs. The City of Salem project alone (see Scenario B in table below) will add another westbound through lane, a westbound right-turn lane and a southbound right-turn lane. The City project will reduce average vehicle delay in the peak hour from 68 seconds to about 43 seconds. If the PacTrust project is approved, then PacTrust will be required to construct an additional eastbound through lane and a northbound right-turn lane. With these additional improvements and the added traffic from the proposed development, intersection performance will improve(Scenario C). The performance of the intersection can be additionally improved by allowing a right-in access on Kuebler Blvd. (Scenario D) and combining that right-in access with future northbound and southbound dual left-turn lanes on Battle Creek at Kuebler when Kuebler improvements are completed (Scenario E). The table below shows how Battle Creek and Kuebler will perform under these different scenarios.

P.M. Peak Hour Performance of Battle Creek Rd. & Kuebler Boulevard With Different Scenarios

	Option	Average Delay	LOS	V/C Ratio
A	Existing Conditions	68.4 seconds	E	0.94
B	With City Kuebler Project	43.1 seconds	D	0.85
C	With City Kuebler Project, PacTrust & Required Improvements	39.5 seconds	D	0.73
D	With City Kuebler Project, PacTrust Development, Required Improvements & Kuebler Right-in Access	35.7 seconds	D	0.69
E	With City Kuebler Project, PacTrust Development, Required Improvements, Kuebler Right-in Access & NB/SB Double Left Turn Lanes	31.9 seconds	C	0.66

A right-in access to the PacTrust site makes it possible to provide dual northbound and southbound left turn lanes on Battle Creek Road at Kuebler. This is because the right-in access allows vehicles coming from the north and west to enter the site without using Battle Creek Road to Boone Road. The left-turn storage length for the southbound Battle Creek Road to Boone Road movement can be reduced and more space is made available to provide dual northbound left-turn lanes at Kuebler Boulevard. **City Staff concludes that Scenario E serves the subject site well and establishes a significant reserve capacity at adjacent intersections.**

Glenn W. Gross, Urban Planning Administrator

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Attachment B

Queuing Analysis
Summary Worksheets

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	233	305	346	151	652	343	101	220	234	101	125	643
Average Queue (ft)	140	246	280	94	385	274	27	140	127	44	82	284
95th Queue (ft)	255	309	355	159	599	338	84	233	212	111	142	557
Link Distance (ft)					882	882			399			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	400		75	100	
Storage Blk Time (%)		15			26	35	0		30	0	20	50
Queuing Penalty (veh)		8			13	33	0		87	0	92	115

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	101
Average Queue (ft)	42
95th Queue (ft)	88
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	123	207	122	21	157	153	239
Average Queue (ft)	85	122	107	11	99	119	134
95th Queue (ft)	127	192	154	23	165	157	228
Link Distance (ft)	305	662			616		399
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100	100		300	
Storage Blk Time (%)		20	0		8		
Queuing Penalty (veh)		45	1		1		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	135	226	123	21	157	153	239
Average Queue (ft)	93	139	109	9	98	110	120
95th Queue (ft)	143	230	154	22	158	158	220
Link Distance (ft)	305	662			616		399
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100	100		300	
Storage Blk Time (%)		20	0		7		
Queuing Penalty (veh)		46	1		1		

Intersection: 8: Boone Road & Cultus Site Access, Interval #1

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	R
Maximum Queue (ft)	90	29	32	96
Average Queue (ft)	90	29	29	96
95th Queue (ft)	90	29	29	96
Link Distance (ft)			464	222
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200	200		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	69	449	432	233	526	489	101	329	134	99	125	676
Average Queue (ft)	42	283	287	100	405	344	43	236	67	45	86	433
95th Queue (ft)	70	444	434	200	565	508	105	353	134	94	157	677
Link Distance (ft)					882	882			399			664
Upstream Blk Time (%)												2
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	210			210			75	400		75	100	
Storage Blk Time (%)		18			34	39	0		13	0	10	58
Queuing Penalty (veh)		10			18	37	0		39	0	47	134

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	60
Average Queue (ft)	25
95th Queue (ft)	57
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	165	312	126	16	139	173	135
Average Queue (ft)	109	214	88	3	97	128	86
95th Queue (ft)	165	338	162	14	151	186	137
Link Distance (ft)	305	662			616		399
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100	100		300	
Storage Blk Time (%)		21	5		10		
Queuing Penalty (veh)		46	17		2		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	165	312	126	21	139	173	135
Average Queue (ft)	97	201	94	6	89	133	84
95th Queue (ft)	165	324	166	21	147	189	132
Link Distance (ft)	305	662			616		399
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100	100		300	
Storage Blk Time (%)		18	4		8		
Queuing Penalty (veh)		40	13		1		

Intersection: 8: Boone Road & Cultus Site Access, Interval #1

Movement	EB	WB	NB	SB	SB
Directions Served	L	L	LTR	LT	R
Maximum Queue (ft)	26	31	32	26	80
Average Queue (ft)	0	31	32	26	80
95th Queue (ft)	0	31	32	26	80
Link Distance (ft)			464	222	222
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200	200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	233	409	403	235	498	517	101	200	198	93	125	682
Average Queue (ft)	75	283	276	96	338	287	46	136	100	44	75	665
95th Queue (ft)	205	384	385	206	489	510	110	206	184	107	137	712
Link Distance (ft)					882	882			399			664
Upstream Blk Time (%)												22
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	210			210			75	400		75	100	
Storage Blk Time (%)		16			25	26	0		27	0	6	69
Queuing Penalty (veh)		8			13	24	0		78	0	29	157

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	120
Average Queue (ft)	64
95th Queue (ft)	126
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	5
Queuing Penalty (veh)	21

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	TR	L	TR
Maximum Queue (ft)	76	248	126	71	131	134
Average Queue (ft)	27	167	101	57	93	67
95th Queue (ft)	71	244	179	86	156	147
Link Distance (ft)	305	662		616		399
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			100		300	
Storage Blk Time (%)		19	0			
Queuing Penalty (veh)		43	1			

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	TR	L	TR
Maximum Queue (ft)	76	248	126	71	199	134
Average Queue (ft)	33	155	85	52	95	60
95th Queue (ft)	78	238	177	84	153	137
Link Distance (ft)	305	662		616		399
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			100		300	
Storage Blk Time (%)		16	0			
Queuing Penalty (veh)		36	1			

Intersection: 8: Boone Road & Cultus Site Access, Interval #1

Movement	EB	WB	NB	SB	SB
Directions Served	L	L	LTR	LT	R
Maximum Queue (ft)	48	31	53	28	56
Average Queue (ft)	48	0	53	28	56
95th Queue (ft)	48	0	53	28	56
Link Distance (ft)			464	222	222
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200	200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	235	471	470	67	464	419	101	282	156	68	125	389
Average Queue (ft)	66	312	310	37	317	249	43	177	95	19	89	320
95th Queue (ft)	198	456	452	73	510	411	94	288	142	65	157	417
Link Distance (ft)					882	882			399			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	400		75	100	
Storage Blk Time (%)		15			15	29	0		22	0	10	57
Queuing Penalty (veh)		8			8	28	0		63	1	45	130

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	90
Average Queue (ft)	31
95th Queue (ft)	82
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	74	509	126	125	133	158	127
Average Queue (ft)	44	254	67	39	82	134	82
95th Queue (ft)	77	543	149	117	130	175	141
Link Distance (ft)	305	662			616		399
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100	100		300	
Storage Blk Time (%)		27	0		6		
Queuing Penalty (veh)		61	0		1		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	74	509	126	125	133	158	139
Average Queue (ft)	40	257	77	35	83	123	91
95th Queue (ft)	74	521	160	107	127	178	156
Link Distance (ft)	305	662			616		399
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100	100		300	
Storage Blk Time (%)		34	0		5		
Queuing Penalty (veh)		78	0		1		

Intersection: 8: Boone Road & Cultus Site Access, Interval #1

Movement	EB	NB	SB	SB
Directions Served	L	LTR	LT	R
Maximum Queue (ft)	46	53	29	118
Average Queue (ft)	0	31	29	74
95th Queue (ft)	0	31	29	74
Link Distance (ft)		464	222	222
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	69	389	364	224	456	358	101	306	111	101	125	412
Average Queue (ft)	41	279	294	91	325	292	30	194	70	56	63	305
95th Queue (ft)	77	365	357	203	470	420	75	307	105	123	113	416
Link Distance (ft)					882	882			399			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	400		75	100	
Storage Blk Time (%)		18		0	25	32	0		15	0	0	44
Queuing Penalty (veh)		9		0	13	30	0		44	0	1	101

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	101
Average Queue (ft)	46
95th Queue (ft)	98
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	0
Queuing Penalty (veh)	1

Intersection: 7: Boone Road & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	119	250	126	125	136	220	115
Average Queue (ft)	91	163	58	29	61	133	81
95th Queue (ft)	138	256	146	109	128	247	117
Link Distance (ft)	305	662			616		399
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100	100		300	
Storage Blk Time (%)		12	0		7		
Queuing Penalty (veh)		27	0		1		

Intersection: 7: Boone Road & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	119	250	126	125	136	220	115
Average Queue (ft)	92	162	68	28	60	133	75
95th Queue (ft)	135	248	156	101	120	237	114
Link Distance (ft)	305	662			616		399
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			100	100		300	
Storage Blk Time (%)		15	0		6		
Queuing Penalty (veh)		35	0		1		

Intersection: 8: Boone Road & Cultus Site Access, Interval #1

Movement	EB	NB	SB
Directions Served	L	LTR	R
Maximum Queue (ft)	71	32	76
Average Queue (ft)	0	32	76
95th Queue (ft)	0	32	76
Link Distance (ft)		464	222
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	235	432	431	235	497	422	120	350	308	101	324	594
Average Queue (ft)	47	306	307	76	314	241	32	203	105	45	119	251
95th Queue (ft)	121	416	409	188	451	387	90	311	203	110	230	428
Link Distance (ft)					886	886			405			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	350		75	300	
Storage Blk Time (%)		19			23	31	0	0	21	0		47
Queuing Penalty (veh)		10			12	30	1	1	62	0		135

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	101
Average Queue (ft)	54
95th Queue (ft)	122
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	0
Queuing Penalty (veh)	2

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	164	204	90	61	135	68	224
Average Queue (ft)	74	117	28	9	77	35	93
95th Queue (ft)	126	189	66	32	131	65	181
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					2		
Queuing Penalty (veh)					0		

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	164	331	90	61	135	69	224
Average Queue (ft)	73	130	25	8	67	35	88
95th Queue (ft)	128	223	60	30	124	64	175
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					2		
Queuing Penalty (veh)					0		

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	NB	SB	SB
Directions Served	L	LTR	LT	R
Maximum Queue (ft)	46	32	26	133
Average Queue (ft)	16	22	22	74
95th Queue (ft)	42	45	37	126
Link Distance (ft)	661	464	211	211
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	235	536	607	254	540	520	101	375	196	101	326	679
Average Queue (ft)	60	303	319	57	285	221	25	228	88	42	157	316
95th Queue (ft)	142	478	504	150	467	432	82	353	155	105	293	603
Link Distance (ft)					886	886			405			664
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	210			210			75	350		75	300	
Storage Blk Time (%)		20		0	21	30	0	1	16	1		52
Queuing Penalty (veh)		11		0	11	29	0	2	49	5		152

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	101
Average Queue (ft)	38
95th Queue (ft)	98
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	0
Queuing Penalty (veh)	1

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	143	244	88	22	112	133	395
Average Queue (ft)	68	125	24	6	56	40	81
95th Queue (ft)	126	227	58	21	108	86	188
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					1		0
Queuing Penalty (veh)					0		0

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	143	244	88	22	112	133	395
Average Queue (ft)	69	123	24	5	54	35	75
95th Queue (ft)	124	216	54	19	106	81	177
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					0		0
Queuing Penalty (veh)					0		0

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	WB	NB	SB	SB
Directions Served	L	L	LTR	LT	R
Maximum Queue (ft)	47	31	54	49	78
Average Queue (ft)	7	9	33	28	56
95th Queue (ft)	34	32	47	53	81
Link Distance (ft)	661	839	464	211	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	234	452	511	235	600	495	120	309	221	99	326	528
Average Queue (ft)	54	278	288	58	312	248	35	179	80	27	134	255
95th Queue (ft)	121	420	441	143	485	433	87	286	160	72	248	475
Link Distance (ft)					886	886			405			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	350		75	300	
Storage Blk Time (%)		14			21	33	0		15	0		42
Queuing Penalty (veh)		7			11	32	0		44	1		122

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	101
Average Queue (ft)	49
95th Queue (ft)	113
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	1
Queuing Penalty (veh)	4

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	170	199	70	43	138	91	205
Average Queue (ft)	71	108	18	7	60	33	64
95th Queue (ft)	138	183	48	25	122	73	160
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					2		
Queuing Penalty (veh)					0		

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	170	241	70	43	138	91	205
Average Queue (ft)	68	119	18	6	62	32	62
95th Queue (ft)	133	208	45	24	126	75	147
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					2		
Queuing Penalty (veh)					0		

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	WB	NB	SB	SB
Directions Served	L	L	LTR	LT	R
Maximum Queue (ft)	66	24	32	50	79
Average Queue (ft)	27	3	21	25	59
95th Queue (ft)	63	17	43	55	91
Link Distance (ft)	661	839	464	211	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	234	579	596	235	666	546	101	286	200	110	325	567
Average Queue (ft)	45	291	288	63	359	272	24	179	80	48	160	303
95th Queue (ft)	137	445	449	145	588	457	81	265	153	112	278	524
Link Distance (ft)					886	886			405			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	350		75	300	
Storage Blk Time (%)		16			25	37	0		17	1		48
Queuing Penalty (veh)		8			13	36	0		51	4		140

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	101
Average Queue (ft)	53
95th Queue (ft)	117
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	2
Queuing Penalty (veh)	7

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	165	227	48	43	241	87	250
Average Queue (ft)	94	133	18	9	73	28	82
95th Queue (ft)	163	212	42	33	163	67	180
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					4		
Queuing Penalty (veh)					1		

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	165	227	51	43	241	87	250
Average Queue (ft)	91	130	19	10	67	28	85
95th Queue (ft)	162	205	43	35	152	64	195
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					3		
Queuing Penalty (veh)					1		

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	WB	NB	SB	SB
Directions Served	L	L	LTR	LT	R
Maximum Queue (ft)	25	50	32	45	78
Average Queue (ft)	13	0	29	21	63
95th Queue (ft)	33	0	34	46	80
Link Distance (ft)	661	839	464	211	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	T	R	L	T
Maximum Queue (ft)	113	472	469	235	613	489	101	326	182	112	325	502
Average Queue (ft)	61	313	310	68	325	260	47	186	92	44	120	283
95th Queue (ft)	99	443	446	142	531	447	110	285	171	109	234	430
Link Distance (ft)					886	886			405			664
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	350		75	300	
Storage Blk Time (%)		16			26	35	0		16	0		49
Queuing Penalty (veh)		9			14	34	0		48	0		142

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB
Directions Served	R
Maximum Queue (ft)	101
Average Queue (ft)	37
95th Queue (ft)	103
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	75
Storage Blk Time (%)	0
Queuing Penalty (veh)	2

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	187	251	49	22	220	90	330
Average Queue (ft)	78	128	16	4	62	34	103
95th Queue (ft)	146	212	38	18	135	75	231
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					1		0
Queuing Penalty (veh)					0		0

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	187	251	49	44	220	90	330
Average Queue (ft)	78	114	16	5	62	35	104
95th Queue (ft)	146	201	37	22	129	73	229
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		300	
Storage Blk Time (%)					1		0
Queuing Penalty (veh)					0		0

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	WB	NB	SB	SB
Directions Served	L	L	LTR	LT	R
Maximum Queue (ft)	42	28	54	49	159
Average Queue (ft)	17	8	17	32	84
95th Queue (ft)	42	28	42	48	152
Link Distance (ft)	661	839	464	211	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	L	T	R	L
Maximum Queue (ft)	235	387	413	235	526	518	100	199	181	197	120	132
Average Queue (ft)	57	254	254	61	323	236	34	122	95	97	42	96
95th Queue (ft)	148	386	372	161	493	408	91	186	160	179	98	154
Link Distance (ft)					886	886				405		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	200	200		75	100
Storage Blk Time (%)		12			23	29	0	0	0	21	0	28
Queuing Penalty (veh)		6			12	28	0	1	0	60	0	116

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	679	120
Average Queue (ft)	440	54
95th Queue (ft)	761	119
Link Distance (ft)	664	
Upstream Blk Time (%)	12	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		75
Storage Blk Time (%)	43	1
Queuing Penalty (veh)	120	6

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	171	231	84	44	131	173	244
Average Queue (ft)	85	140	27	10	59	40	96
95th Queue (ft)	170	215	63	32	116	98	199
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					1		3
Queuing Penalty (veh)					0		2

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	171	231	84	44	131	174	309
Average Queue (ft)	83	144	24	8	61	45	105
95th Queue (ft)	163	214	58	29	116	113	216
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					1	0	4
Queuing Penalty (veh)					0	0	3

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	LTR	LT	R
Maximum Queue (ft)	48	31	29	54	26	206
Average Queue (ft)	30	9	4	22	22	97
95th Queue (ft)	57	32	21	45	37	179
Link Distance (ft)	661	839	839	464	211	211
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	L	T	R	L
Maximum Queue (ft)	235	494	490	235	468	414	101	173	145	222	112	144
Average Queue (ft)	64	294	286	77	306	223	30	110	77	80	39	113
95th Queue (ft)	147	485	455	204	439	392	84	160	128	160	97	156
Link Distance (ft)					886	886				405		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	200	200		75	100
Storage Blk Time (%)		12		0	18	24	0			17	1	39
Queuing Penalty (veh)		6		0	9	23	0			50	5	157

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	679	120
Average Queue (ft)	541	42
95th Queue (ft)	824	109
Link Distance (ft)	664	
Upstream Blk Time (%)	25	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		75
Storage Blk Time (%)	42	1
Queuing Penalty (veh)	118	6

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	230	274	69	21	173	175	326
Average Queue (ft)	80	112	19	5	51	48	134
95th Queue (ft)	170	210	51	18	106	112	290
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					1		4
Queuing Penalty (veh)					0		3

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	230	274	72	60	173	175	326
Average Queue (ft)	79	113	19	7	54	45	128
95th Queue (ft)	161	205	53	30	113	104	270
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					2		4
Queuing Penalty (veh)					0		3

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	LTR	LT	R
Maximum Queue (ft)	47	53	31	32	48	81
Average Queue (ft)	23	8	4	26	22	63
95th Queue (ft)	51	38	22	44	47	83
Link Distance (ft)	661	839	839	464	211	211
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	L	T	R	L
Maximum Queue (ft)	110	434	448	235	588	515	101	176	139	202	120	125
Average Queue (ft)	42	232	246	60	299	234	28	114	79	88	38	111
95th Queue (ft)	98	375	397	136	483	392	87	155	141	171	95	145
Link Distance (ft)					886	886				405		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	200	200		75	100
Storage Blk Time (%)		10			20	26	0			22	0	34
Queuing Penalty (veh)		5			10	24	0			63	0	137

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	679	120
Average Queue (ft)	398	62
95th Queue (ft)	721	130
Link Distance (ft)	664	
Upstream Blk Time (%)	8	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		75
Storage Blk Time (%)	49	1
Queuing Penalty (veh)	139	6

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	146	229	52	44	204	87	176
Average Queue (ft)	69	116	16	10	63	28	69
95th Queue (ft)	143	209	40	33	133	70	142
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					2		2
Queuing Penalty (veh)					0		1

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	146	265	53	44	204	87	266
Average Queue (ft)	69	128	19	9	58	28	84
95th Queue (ft)	145	230	44	31	121	69	177
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					1		1
Queuing Penalty (veh)					0		1

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	WB	NB	SB	SB
Directions Served	L	L	LTR	LT	R
Maximum Queue (ft)	92	54	51	51	136
Average Queue (ft)	34	12	34	22	83
95th Queue (ft)	79	45	45	50	134
Link Distance (ft)	661	839	464	211	211
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	L	T	R	L
Maximum Queue (ft)	233	559	565	235	634	574	120	226	236	428	120	125
Average Queue (ft)	48	253	271	59	363	274	38	129	107	101	39	111
95th Queue (ft)	119	407	438	150	565	489	98	190	194	221	95	144
Link Distance (ft)					886	886				405		
Upstream Blk Time (%)										1		
Queuing Penalty (veh)										3		
Storage Bay Dist (ft)	210			210			75	200	200		75	100
Storage Blk Time (%)		12		0	27	32	0	2	0	19	0	30
Queuing Penalty (veh)		6		0	14	30	0	3	1	56	0	119

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	679	101
Average Queue (ft)	489	37
95th Queue (ft)	765	95
Link Distance (ft)	664	
Upstream Blk Time (%)	9	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		75
Storage Blk Time (%)	40	2
Queuing Penalty (veh)	112	9

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	164	185	50	43	177	175	201
Average Queue (ft)	72	105	16	13	56	36	100
95th Queue (ft)	140	170	39	35	121	74	197
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					2		3
Queuing Penalty (veh)					0		2

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	164	253	70	43	177	175	306
Average Queue (ft)	77	111	17	10	58	41	109
95th Queue (ft)	142	200	44	32	122	100	229
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					3		3
Queuing Penalty (veh)					0		3

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	NB	SB	SB
Directions Served	L	LTR	LT	R
Maximum Queue (ft)	44	32	89	77
Average Queue (ft)	18	27	35	60
95th Queue (ft)	47	45	72	75
Link Distance (ft)	661	464	211	211
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	T	TR	L	T	T	R	L	L	T	R	L
Maximum Queue (ft)	235	409	451	235	561	458	101	159	153	136	101	125
Average Queue (ft)	59	242	254	59	310	234	42	106	64	78	44	111
95th Queue (ft)	133	381	402	149	483	391	105	165	124	127	98	145
Link Distance (ft)					886	886				405		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	210			210			75	200	200		75	100
Storage Blk Time (%)		10			19	27	0			20	0	35
Queuing Penalty (veh)		5			10	26	0			57	0	140

Intersection: 5: Kuebler Blvd & Battle Creek Rd, All Intervals

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	679	119
Average Queue (ft)	490	49
95th Queue (ft)	837	111
Link Distance (ft)	664	
Upstream Blk Time (%)	10	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		75
Storage Blk Time (%)	45	0
Queuing Penalty (veh)	127	2

Intersection: 7: Boone Rd & Battle Creek Rd, Interval #2

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	127	265	50	21	223	175	222
Average Queue (ft)	56	120	19	7	65	40	104
95th Queue (ft)	114	209	40	22	142	122	209
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					2		2
Queuing Penalty (veh)					0		2

Intersection: 7: Boone Rd & Battle Creek Rd, All Intervals

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	167	265	50	21	223	175	303
Average Queue (ft)	64	125	17	7	60	35	116
95th Queue (ft)	130	212	38	21	130	109	256
Link Distance (ft)	305	661	661		610		405
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				100		150	
Storage Blk Time (%)					2		3
Queuing Penalty (veh)					0		2

Intersection: 8: Boone Rd & Cultus Site Access, Interval #1

Movement	EB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	LTR	LT	R
Maximum Queue (ft)	46	29	32	32	48	98
Average Queue (ft)	22	4	5	26	23	62
95th Queue (ft)	44	21	23	44	46	95
Link Distance (ft)	661	839	839	464	211	211
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

HEARINGS OFFICER

PLANNING DIVISION
555 LIBERTY ST. SE/ROOM 305
SALEM, OREGON 97301
PHONE: 503-588-6173
FAX: 503-588-6005

CITY OF Salem AT YOUR SERVICE

ISSUE: Zone Change Case No. 09-3

DATE OF DECISION: October 27, 2009

APPLICANT: Jeff Tross, for Pacific Realty Associates, LP (PacTrust)

PURPOSE OF REQUEST: To change the zoning district from CO (Commercial Office) and RA (Residential Agriculture) to CR (Commercial Retail) and CO (Commercial Office) for property approximately 9.96 acres in size and located on the east side of Battle Creek Road SE between Kuebler Boulevard SE and Boone Road SE (Marion County Assessor's map and tax lot number 083W11D 00600 and 083W12C 00702).

ACTION:

The Hearings Officer GRANTS the request to change the zoning district from CO (Commercial Office) and RA (Residential Agriculture) to CR (Commercial Retail) and CO (Commercial Office) for property approximately 9.96 acres in size and located on the east side of Battle Creek Road SE between Kuebler Boulevard SE and Boone Road SE (Marion County Assessor's map and tax lot number 083W11D 00600 and 083W12C 00702) subject to the following conditions of approval:

Condition 1: Prior to development obtain a new UGA permit for the subject property.

Condition 2: Construct the mitigating street improvements specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

Condition 3: At the time of building permit, the applicant shall provide separate legal descriptions for the property zoned CR (Commercial Retail) and CO (Commercial Office), respectively.

The rights granted by this decision must be exercised by October 27, 2010, or this approval shall be null and void.

Application Completion Date: August 19, 2009
Decision Mailing Date: October 27, 2009
State Mandated Decision Date: December 17, 2009

This decision is final unless written appeal from an aggrieved party is filed with the City of Salem Planning Division, Room 305, 555 Liberty Street SE, Salem OR 97301, no later than November 13, 2009. The appeal must state where the decision failed to conform to the provisions of the applicable code section, SRC Chapter 115. The appeal must be filed in duplicate with the City of Salem Planning Division. The appeal fee must be paid at the time of filing. If the appeal is untimely and/or lacks the proper fee, the appeal will be rejected. The Salem City Council will review the appeal at a public hearing. After the hearing, the City Council may amend, rescind, or affirm the action, or refer the matter to staff for additional information.

Case Planner: Lisa Anderson-Ogilvie, Associate Planner; Email: lmanderson@cityofsalem.net

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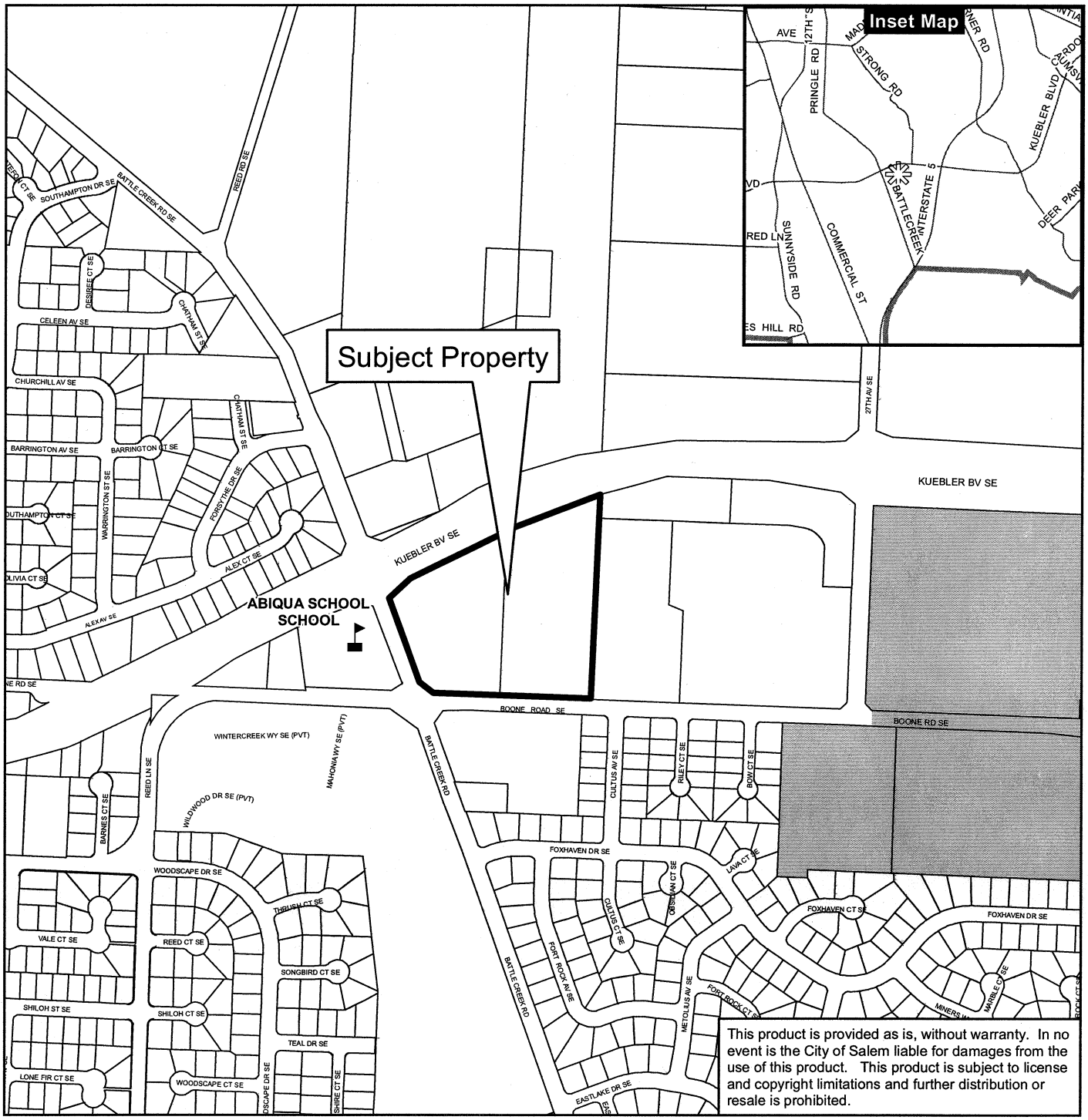
Vicinity Map
East side of Battle Creek Road SE between Kuebler Blvd SE and Boone Road SE



Legend

- Outside Salem City Limits
- Urban Growth Boundary
- Taxlots
- Historic District
- Schools
- Parks

0 100 200 400 Feet

CITY OF Salem AT YOUR SERVICE
Community Development Dept.

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CITY OF SALEM
BEFORE THE HEARINGS OFFICER

AN APPLICATION TO CHANGE THE ZONING DISTRICT FROM CO (COMMERCIAL OFFICE) AND RA (RESIDENTIAL AGRICULTURE) TO CR (COMMERCIAL RETAIL) AND CO (COMMERCIAL OFFICE) FOR PROPERTY APPROXIMATELY 9.96 ACRES IN SIZE AND LOCATED ON THE EAST SIDE OF BATTLE CREEK ROAD SE, BETWEEN KUEBLER BOULEVARD SE AND BOONE ROAD SE.	)	Zone Change Case No. 09-3 FINDINGS OF FACT CONCLUSIONS AND DECISION

DATE AND PLACE OF HEARING:

September 23, 2009, Salem City Council Chambers, 555 Liberty Street SE, Salem, Oregon

APPEARANCES:

Staff:	Lisa Anderson-Ogilvie, Associate Planner
Neighborhood Association:	South Gateway Neighborhood Association No Appearance
Proponents:	Jeff Tross Anthony Yih Wendy Kellington
Opponents:	Brian Sampson Mark Shipman, representing John Miller

SUMMARY OF THE APPLICATION AND HEARING

This is a request to change the zoning district from CO (Commercial Office) and RA (Residential Agriculture) to CR (Commercial Retail) and CO (Commercial Office) for property approximately 9.96 acres in size and located on the east side of Battle Creek Road SE, between Kuebler Boulevard SE and Boone Road SE.

FINDINGS OF FACT AND CONCLUSIONS

1. It is the finding of the Hearings Officer that this decision will not challenge in any way the decision in CPC/ZC06-06. The applicable criteria for this zone change is stated later on in this order, and that criteria is the criteria which must be satisfactorily addressed. It is independent of the previous decision.

2. The Salem Area Comprehensive Plan (SACP) map designates the subject property as "Commercial."

3. The proposed CO (Commercial Office) and CR (Commercial Retail) zoning implements the Commercial Comprehensive Plan designation.

4. The subject property is zoned CO (Commercial Office) and RA (Residential Agriculture). Zoning and land use of surrounding properties is as follows:

North: RA (Residential Agriculture); across Kuebler Boulevard SE - single family dwellings and large acreage agricultural parcels
South: RA (Residential Agriculture) and RS (Single Family Residential); church
East: CR (Commercial Retail); large acreage/agricultural parcel - site of future PacTrust retail commercial center
West: CN (Commercial Neighborhood); across Battle Creek Road SE - commercial offices

5. The Hearings Officer believes that each zone change must be independently reviewed as to whether or not it complies with the Transportation Planning Rule (TPR). The applicant asserted that the traffic impact analysis (TIA) submitted for the 2006 zone change suffices, because that TIA assumed a zone change on the acreage now subject to this application. The opponent argued that newer data needed to be developed to satisfy the TPR. However, the testimony of the traffic engineer representing the applicant convinced the Hearings Officer that the original TIA was an appropriate analysis for this zone change. The traffic engineer emphasized the fact that trip potential rather than traffic volume, is the key, and that that has not changed between the previous zone change and this application. The trip potential assumed the CO zone. Beyond that, development of the site would ensure safe, convenient pedestrian access between the main entries of the building on the site, the parking areas, and the surrounding development. Furthermore, transit service is provided via Routes 6, 12th, and Battle Creek. Bicycle lanes will be required in conjunction with street improvements.

6. Salem Revised Code 114.160 provides the approval criteria for a zone change.

(A) The applicant...shall have the burden of proving justification for the proposal. The greater the impact of the proposal in an area, the greater is the burden of the proponent.

It is the finding of the Hearings Officer that the burden is minimal; it is comprehensively planned as "commercial" and the zone change is consistent with the Comprehensive Plan designation. The existing RA (Residential Agriculture) zoning does not implement the commercial plan designation. A zone change is of minimal impact and is appropriate. In addition, the proposed zone change is consistent with the relationship of the site to the land use and transportation patterns that are present at the location.

(B) The proposal must be supported by proof that it conforms to all applicable criteria imposed in this zoning code; that it conforms to all standards imposed by applicable goals and policies of the Comprehensive Plan in light of its intent statements, including adopted neighborhood plans and that it conforms with all applicable land use standards imposed by state law or administrative regulation.

It is the finding of the Hearings Officer that this criterion has been satisfied. The subject site is intended to serve a market area of several neighborhoods. The proposed zones are consistent with the category of commercial activity that is provided for in the plan. The proposal is consistent with the Comprehensive Plan designation, the land use pattern, the transportation system, and the visions of the public facilities at the location. The following policies are also found to be in compliance by the application:

(1) Shopping and Service Facilities

The requirements of this policy are met by providing the referenced information for review and approval prior to the development of the site.

(2) Community Shopping and Service Facilities

The subject site is adjacent to the two major streets that serve this part of the urban area. Based on its location along these major streets, the location is appropriate for this level of development. Adequate parking will be provided on the parking site according to the zone code standards. Location along Kuebler and Battle Creek will allow traffic from outside of the immediate neighborhoods to access the site.

(3) Neighborhood and Community Shopping Service Facilities

There is no other similar commercial development in the vicinity and the area is not committed to strip development. The subject site's development, in coordination with the adjacent 18 acres will form a commercial service cluster that is located to serve the surrounding neighborhoods. The depth of the property from the street frontage avoids formation of a strip development pattern. Due to its location adjacent to arterial streets, it serves this part of the urban area and the nature of the transportation system that serves the location - the site is appropriately located.

(4) Commercial Office Uses

The site is located adjacent to Kuebler and Battle Creek, which are arterials, and to Boone Road which is a collector. This driveway access will be to Boone Road and thus satisfies the access requirements for office uses.

(5) Bufferstrips

Single Family Residential neighborhoods are located to the south of the subject site with bufferyards, setback and screening landscaping requirements that will apply. A site-obscuring fence or wall can be provided, if necessary.

It has been suggested that express conditions of the previous zone change approval were never fulfilled as to the northern portion of the subject property, and therefore the zone change never vested, and the property thus remains in an RA zone. However, it is the finding of the Hearings Officer that the zone change was completed when the order making that change was final. Therefore, it was zoned CO and not RA. Previous land use actions have determined that commercial designation is appropriate for this site. The zone change conforms to the goals and policies of the Salem Area Comprehensive Plan.

(C) In addition to the proof under (A) and (B) above, the following factors shall be evaluated by the proponent and shall, where relevant, be addressed by the administrative body in its final decision:

1) The existence of a mistake in the compilation of any map or in the application of a particular land use designation to any property in this zoning code or the Comprehensive Plan.

It is the finding of the Hearings Officer that no mistake in the application of the Comprehensive Plan designation, nor in the zoning of the subject property exists. This criterion is not applicable.

2) A change in the social, economic, or demographic patterns of the neighborhood or of the community.

Since the subject property was re-designated to "commercial" in 1995, there has been ongoing development on surrounding lands in the immediate area. Intensive residential development has occurred to the south across Boone and around Battle Creek, including the new Kathryn's Addition. In addition, major industrial development is planned at the 500-acre Mill Creek Corporate Center to the Northeast of Kuebler and retirement housing is planned to the south of Kuebler. These residential, industrial, and commercial projects represent changes to the social, economic and demographic patterns of the neighborhood and the community. All these changes have been forecast by the Salem-Keizer Area Transportation System plan. While these changes in the social, economic, and demographic patterns of the neighborhood have occurred, it is argued that because they were anticipated, they do not in fact represent changes. However, it is the finding of the Hearings Officer that even though they were anticipated changes, they had not yet occurred, and therefore do constitute a change in the social, economic, and demographic patterns of the neighborhood. This criterion is satisfied.

3) A change of conditions in the character of the neighborhood in which the use or development is proposed.

The surrounding area has changed from a low-density residential and agricultural area to an urbanized developed residential area. Additional commercial and industrial projects have changed the area and are consistent with this proposal. As previously discussed, there has been a change in the conditions of the character of the neighborhood as a result of the ongoing development of formerly vacant land. Again, while the development that occurred may have been anticipated, the actual occurrence fo the development constitutes a change in the character of the neighborhood.

4) The effect of the proposal on the neighborhood, the physical characteristics of the subject property, and public facilities and services.

The effect of the proposal on the neighborhood, the property and the public facilities was considered as part of CPC/ZC 06-6, which re-designated the adjacent 18 acres to Commercial/CR. The effect of the proposal on the property itself will be to establish office based retail and service activities on the property. These uses are expected and appropriate for property that is designated as commercial on the Comprehensive Plan and located along a major arterial street. Public utility requirements were reviewed by the City, and public facilities can be made available to the site at the levels that would be adequate to serve the uses.

Generally speaking, the effect on the neighborhood and the physical characteristics of the property were anticipated at the time the property was designated as Commercial. However, the subject property had a preliminary declaration for urban growth area development, issued in 2001. That declaration has expired and the required improvements have not been constructed. Therefore, the applicant will need to obtain a new UGA permit prior to any developments on the subject property in order to assure that all public facilities will be provided at adequate levels for the development. The following condition, therefore, shall apply:

Condition 1:

Prior to development, obtain a new UGA permit for the subject property.

The Traffic Impact Analysis (TIA) submitted for the abutting property's Comprehensive Plan change and Zone Change (CPC/ZC 06-6) encompassed developments on the subject property. In that application, the applicant stated that those 18.4 acres and the 9.96 acres of the subject property would be developed together. The applicant since purchased the subject property and still plans to develop the properties together. Therefore, the subject property shall be held to the same conditions of approval for street improvements as the abutting 18.4 acres and the following condition shall apply:

Condition 2:

Construct the mitigating street improvements specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

5) All other factors relating to the public health, safety and general welfare which the administrative body deems relevant.

It is the finding of the Hearings Officer that there is no testimony that indicates that the proposal would affect the public health, safety or general welfare. In fact, it appears that it would be beneficial in that it is providing office and retail services in closer proximity to residential populations.

However, the subject property will be split-zoned, if the zone change is approved. In order to ensure that City mapping correctly reflects the acreage for each proposed zone, the following condition shall apply:

Condition 3:

At the time of the building permit, the applicant shall provide separate legal descriptions for the property zoned CR (Commercial Retail) and CO (Commercial Office).

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Based upon the foregoing, the Hearings Officer makes the following:

DECISION

The Hearings Officer GRANTS the request to change the zoning district from CO (Commercial Office) and RA (Residential Agriculture) to CR (Commercial Retail) and CO (Commercial Office) for property approximately 9.96 acres in size, and located on the east side of Battle Creek Road SE between Kuebler Boulevard SE and Boone Road SE, subject to the following conditions of approval:

Condition 1:

Prior to development, obtain a new UGA permit for the subject property.

Condition 2:

Construct the mitigating street improvements specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

Condition 3:

At the time of the building permit, the applicant shall provide separate legal descriptions for the property zoned CR (Commercial Retail) and CO (Commercial Office), respectively.

DATED: October 27, 2009

Scott A. Fewel, Hearings Officer

NOTICE OF DECISION

PLANNING DIVISION
555 LIBERTY ST. SE, RM 305
SALEM, OREGON 97301
PHONE: 503-588-6173
FAX: 503-588-6005

CITY OF Salem AT YOUR SERVICE

Si necesita ayuda para comprender esta informacion, por favor llame 503-588-6173

DECISION OF THE PLANNING ADMINISTRATOR

CASE NO: Type II Site Plan Review-Urban Growth Area Development Permit NO. SPR-UGA12-11

RECEIVED

APPLICATION NOS. : 12-110419-RP AND 12-110418-LD

SEP 10 2012

NOTICE OF DECISION DATE: September 7, 2012

PacTrust

In the matter of the application for a consolidated Type II Site Plan Review and Urban Growth Area Permit submitted by the applicant, M and T Partners Inc, on behalf of the property owners, M and T Partners Inc and Pacific Realty Associates LP, the Planning Administrator, having received and reviewed evidence and application materials, makes the following findings and adopts the following order as set forth herein.

REQUEST: Consolidated UGA Permit to determine the required public facilities for office and retail development and Type II Site Plan Review to develop a 15,000 square foot medical office building and 23,100 square foot medical office building on properties approximately 7.5 acres in size that lie outside the Urban Service Area (USA), are zoned CO (Commercial Office) and CR (Retail Commercial), and are located in the 2500 Block of Boone Road SE 97306 (Marion County Assessor Map and Tax Lot 083W11D 00600 and 083W12C 00702). The Type II Site Plan Review also includes construction of an accessway on an abutting property approximately 7.5 acres in size, zoned CR (Retail Commercial), and located at 2541 Boone Road SE 97306 (Marion County Assessor Map and Tax Lot 083W12C 01900).

APPLICANT: M and T PARTNERS INC

LOCATION: 2500 BLOCK OF BOONE ROAD SE / 97302 (Attachment 1)

CRITERIA: Salem Revised Code Chapter 163.070(b) and Salem Revised Code Chapter 66

DECISION:

APPROVED subject to the applicable standards of the Salem Revised Code, the findings contained herein, conformance with the approved site plan included as Attachment 2, and the following conditions of approval:

Condition 1: As a condition of building permit issuance for UGA Phase 1, construct a minimum 15-foot-wide half-street improvement along the entire frontage on the development side of Boone Road SE (Boone). The street and right-of-way width shall also accommodate a westbound right-turn lane and a westbound left-turn lane at Battle Creek Road SE (Battle Creek).

Condition 2: As a condition of building permit issuance for UGA Phase 1, construct a minimum 23-foot-wide half-street improvement on the development side of Battle Creek from Boone Road to Kuebler Boulevard SE (Kuebler). The street and right-of-way width shall accommodate a northbound left-turn lane at Kuebler with a minimum 300 feet of storage and a southbound left-turn lane at Boone with a minimum 300 feet of storage.

Condition 3: As a condition of building permit issuance for UGA Phase 1, construct an exclusive eastbound right-turn lane on Kuebler at Battle Creek.

Condition 4: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, along the entire frontage on the development side of Kuebler, construct a minimum 40-foot-wide half-street improvement. This project meets the criteria for fee-in-lieu of improvement per SRC 66.595.

Condition 5: As a condition of building permit issuance for UGA Phase 1, construct a 12-inch water main in Battle Creek from Boone to Kuebler as shown in the Water System Master Plan. The main shall connect to the existing 30-inch system in Boone and terminate at the northerly extent of the Battle Creek improvement.

Condition 6: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, complete the 12-inch water system in Battle Creek from Boone to Kuebler by connecting the 12-inch main in Battle Creek to the 10-inch main in the north side of Kuebler.

Condition 7: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall provide separate legal descriptions for the property zoned CR (Commercial Retail) and CO (Commercial Office).

Condition 8: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall record Property Line Adjustment No. 12-03 and Property Line Adjustment No. 12-04.

Condition 9: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, complete all remaining mitigating street improvements required as a condition of approval for Zone Change 09-3 and specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

Condition 10: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall sign an improvement deferral agreement which specifies the terms of the deferral as outlined in conditions 1, 2, 3, 4, and 9. Said agreement shall be in a form approved by the city attorney and shall be filed in the deed records of Marion County.

Condition 11: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall provide a copy of a recorded access easement across the abutting property (Marion County Assessor Map and Tax Lot 083W12C 01800), including a legal description that specifies the location of the easement and its dimensions in conformance with the approved site plan.

FINDINGS

1. Consolidated (Collective) Applications

Salem Revised Code 300.120(c) provides that multiple land use applications may be processed as collective or consolidated applications. Review of the application shall be according to the highest numbered procedure type required for any of the land use applications. The Review Authority shall be the highest applicable Review Authority under the highest numbered procedure type required for any of the land use applications. In this case, the Site Plan Review application and Urban Growth Area Development Permit Preliminary Declaration are both Type II applications, and the Planning Administrator is the Review Authority for the consolidated decision. If the decisions had been processed separately, the Review Authority for an appeal would have been the Hearings Officer for the Type II Site Plan Review or the City Council for the Urban Growth Area Development Permit Preliminary Declaration. Therefore, the City Council would be the Review Authority for an appeal of this consolidated application.

2. Type II Site Plan Review Applicability

Site plan review is intended to provide a unified, consistent, and efficient means to review proposed development that requires a building permit, other than single-family, duplex residential, and installation of signs, to ensure that such development meets all applicable requirements imposed by the Salem Revised Code (SRC). SRC 163.020(d) requires Type II Site Plan Review for development that involves a land use or limited land use decision, as those terms are defined in ORS 197.015. Land use and limited land use decisions include, but are not limited to, any development application that requires deviation from the clear and objective standards of the Salem Revised Code and where the Planning Administrator or Director of Public Works is granted the authority to use limited discretion in deviating from the established standard.

Pursuant to SRC Chapter 163.020(d), type II site plan review is required for this application because the proposed development requires a Transportation Impact Analysis pursuant to the Transportation System, a Geologic Assessment, and deviation from the clear and objective standards of the Salem Revised Code and where the Planning Administrator or Director of Public Works is granted the authority to use limited discretion in deviating from the established standard. The applicant is requesting that the Planning Administrator allow deferral of construction of some of the mitigating traffic improvements imposed as a condition of approval for

Zone Change Case No. 09-3 and specified in the final approval of Comprehensive Plan Change/Zone Change Case No. 06-6, pursuant to SRC 113.205(b)(11)(A).

3. Background

An application for a Type II Site Plan Review and Urban Growth Area Development Permit was received by the City on June 29, 2012. The application was deemed complete for processing on July 27, 2012.

The site plan is included as Attachment 2 and indicates a proposed boundary between a CO (Commercial Office) zone where the medical office buildings would be constructed and a CR (Retail Commercial) zone where a small parking area and accessway would be constructed and future retail development is planned. The overall utility plan (Attachment 3) designates the CO-zoned area as UGA Phase 1, the CR-zoned area north of UGA Phase 1 as UGA Phase 2, and the CR-zoned area east of UGA Phase 1 and UGA Phase 2 as UGA Future Phase.

Neighborhood and Citizen Comments:

Notice of the application was mailed on August 2, 2012 to the South Gateway Neighborhood Association and Morningside Neighborhood Association and all property owners of record within 250 feet of the subject property.

Comments were received from South Gateway Neighborhood Association (Attachment 4) indicating that they had reviewed the request to defer construction of some of the mitigating traffic improvements imposed as a condition of approval for Zone Change Case No. 09-3 and specified in the final approval of Comprehensive Plan Change/Zone Change Case No. 06-6, and they defer to the expertise of the staff of Public Works Development Services and Traffic Engineering, but they would prefer that the following improvements be completed now and not deferred:

a. The intersection of Battle Creek and Boone Roads SE shall be improved to include a traffic signal with a dedicated westbound left-turn lane, westbound right-turn lane and an eastbound left-turn lane. This becomes even more critical because of the City's recent approval of the Wildwood Company's intentions to re-purpose the Old Pringle School property. The Association recommends that PacTrust be required to pay only their proportionate amount for these improvements.

   Staff Response:
   Public Works reviewed the proposal and determined that the westbound left-turn lane and westbound right-turn lane on Boone Road SE and the southbound left-turn lane on Battle Creek Road SE shall be constructed as a condition of building permit issuance for UGA Phase 1. The eastbound left-turn lane on Boone Road SE and the traffic signal will be deferred and shall be constructed as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase. Public Works cannot require the applicant to make improvements based on the Wildwood Company's proposed redevelopment.

b. The widening and improvement of the south side of Kuebler Boulevard be completed in its entirety at a logical and reasonable time as determined by the Public Works Development Services and Traffic Engineering Departments, but no later than the completion of the State of Oregon's planned improvements to the I-5 and Kuebler Road interchange. In the alternative, if the requested improvements above to the south side of Kuebler Road are not completed immediately, SGNA requests that PacTrust be required to install a right-turn lane along the eastbound approach to the Kuebler/Battle Creek Road intersection as an interim improvement.

   Staff Response:
   Public Works reviewed the proposal and determined that an exclusive eastbound right-turn lane on Kuebler Boulevard at Battle Creek Road shall be required as a condition of building permit issuance for UGA Phase 1, and a minimum 40-foot-wide half street improvement shall be constructed along the Kuebler Boulevard frontage of the property subject to this UGA as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase. Other improvements on Kuebler will be deferred and shall be constructed as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase.

c. SGNA supports the recommendation of Kittleson & Associates, dated July 13, 2012, that landscaping, signage, and new above-ground utilities along the site frontage be located and maintained to provide a clear sight line to the east and west from the current site driveway on Boone Road SE.

Staff Response: Landscaping, signs, and above-ground utilities along all site frontages will be required to comply with vision clearance requirements in SRC Chapter 76.170.

Comments were received from Larry R. George, representing the Morningside Neighborhood Association Land Use Committee. Mr. George commented that he thought that the zoning change from residential to commercial required that before this property was developed that the applicant had to add the eastbound second lane of Kuebler from Commercial Street to I-5 and asked when this was going to be done as agreed.

Staff Response:
Public Works reviewed the proposal and determined that a minimum 40-foot-wide half street improvement shall be constructed along the Kuebler Boulevard frontage of the property subject to this UGA as a condition of building permit issuance for UGA Phase 2 or UGA Future Phase. Other improvements on Kuebler will be deferred and shall be constructed as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase.

Comments were received from Travis Henry, vice president of Wildwood, Inc., indicating that the corporation reviewed the application and supports it but reserves the right to amend this support if conditions changes

Comments were received from one property owner on Riley Court SE indicating no objections.
City Department Comments:

The Public Works Department reviewed the proposal and provided a memo which is included as Attachment 5.

The Salem Building and Safety Division and Police Department have reviewed the proposal and indicated no objections.

The Salem Fire Department reviewed the proposal and commented that Fire Department access, water supply, fire flow, and fire hydrant locations shall be provided in accordance with the Salem Fire Prevention Code. Buildings exceeding 30 feet in height shall have at least two means of fire apparatus access for each structure in accordance with OFC D104.1

Staff Response:
Compliance with Fire Department requirements will be verified and required at building permit.

Public Agency Comments:

Salem Keizer School District reviewed the proposal and had no objections.

4. Analysis of Preliminary Declaration for Urban Growth Area (UGA) Development Permit Criteria

The subject property is located outside the City's Urban Service Area (USA) and within the Urban Growth Area. SRC 66.050 requires that the developer obtain an Urban Growth Area Development Permit prior to application for a building permit and that the building official shall ascertain that all conditions of the Urban Growth Area Development Permit have been complied with prior to issuing a certificate of occupancy. The UGA requirement applies to the medical office building development on tax lots 083W11D 00600 and 083W12C 00702. The proposed accessway on tax lot 083W12C 01900 does not meet the definition of development for purposes of UGA requirements.

The following is a Preliminary Declaration of the facility improvements required to obtain an Urban Growth Area (UGA) Development Permit for the subject property. The Preliminary Declaration is subject to the terms of Salem Revised Code (SRC) Chapter 66, the Salem Transportation System Plan (STSP), the City of Salem Stormwater Management Master Plan, City of Salem Water System Master Plan, Salem Wastewater Management Master Plan, Public Works Design Standards, Comprehensive Parks System Master Plan, and conditioned on the provision of the public facilities as listed below.

This Preliminary Declaration for a UGA permit addresses only those facility requirements necessary to link the development to adequate facilities and boundary requirements abutting the property (SRC 66.140). All internal facility improvement requirements will be addressed at the time of development of the property. Salem Revised Code (SRC) Chapter 66 '"Urban Growth Management" sets forth the City's authority for imposing linking and boundary facility improvement requirements.

The Facts and Findings of the Department of Public Works are attached as Attachment 5. The references to UGA Phase 1, UGA Phase 2, and UGA Future Phase refer to phases denoted on the applicant's overall utility

plan (Attachment 3). The boundary between phases correlates with the proposed boundary between the CO (Commercial Office) zone and CR (Retail Commercial) zone within the property subject to the UGA, which will be addressed in the conditions of approval for the Type II Site Plan Review. UGA Phase 1 includes the proposed CO-zoned area on which the proposed medical office buildings and large parking lot will be constructed. UGA Phase 2 includes the proposed CR-zoned area on which a small parking lot is currently proposed and retail development will occur in the future. The applicant has the responsibility to provide the following facilities pursuant to the requirements of the UGA Development Permit and according to SRC Chapter 66:

A. Street Requirements

An adequate linking street is defined as the nearest point on a street that has a minimum 60-foot-wide right-of-way with a minimum 30-foot improvement for local streets or a minimum 34-foot improvement for major streets (SRC 66.100(a)). All streets abutting the property boundaries shall be designed to the greater of the standards of SRC 63.225 and SRC 63.235 and the standards of linking streets in SRC 66.100(c). Boundary streets are required along the entire frontage of each development phase at the time of building permit issuance as described in the conditions of approval.

The following conditions of approval shall apply to ensure that proper boundary street improvements are provided:

Condition 1: As a condition of building permit issuance for UGA Phase 1, construct a minimum 15-foot-wide half-street improvement along the entire frontage on the development side of Boone Road SE (Boone). The street and right-of-way width shall also accommodate a westbound right-turn lane and a westbound left-turn lane at Battle Creek Road SE (Battle Creek).

Condition 2: As a condition of building permit issuance for UGA Phase 1, construct a minimum 23-foot-wide half-street improvement on the development side of Battle Creek from Boone Road to Kuebler Boulevard SE (Kuebler). The street and right-of-way width shall accommodate a northbound left-turn lane at Kuebler with a minimum 300 feet of storage and a southbound left-turn lane at Boone with a minimum 300 feet of storage.

Condition 3: As a condition of building permit issuance for UGA Phase 1, construct an exclusive eastbound right-turn lane on Kuebler at Battle Creek.

Condition 4: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, along the entire frontage on the development side of Kuebler, construct a minimum 40-foot-wide half-street improvement. This project meets the criteria for fee-in-lieu of improvement per SRC 66.595.

B. Sanitary Sewer Requirements

The proposed development shall be linked to adequate facilities by the construction of sewer lines and pumping stations, which are necessary to connect to such existing sewer facilities (SRC 66.110). The applicant shall construct the *Salem Wastewater Management Master Plan* improvements and link the site to existing facilities that are defined as adequate under 66.020(a). Sewer mains in 27th Avenue and Boone Road are adequate to serve the proposed development.

C. Storm Drainage Requirements

The applicant shall be required to design and construct a storm drainage system at the time of development. The applicant shall provide an analysis that includes capacity calculations, detention requirements, and evaluation of the connection to the approved point of disposal (SRC 63.195). The applicant shall link the on-site system to existing facilities that are defined as adequate under SRC 66.020(a).

D. Water Service Requirements

The proposed development shall be linked to adequate facilities by the construction of water distribution lines, reservoirs, and pumping stations that connect to such existing water service facilities (SRC 66.120). The Water System Master Plan requires construction of a 12-inch S-2 water line in Battle Creek Road

SE. Construction of these required facilities and other potential alternatives are described in the following conditions of approval.

Condition 5: As a condition of building permit issuance for UGA Phase 1, construct a 12-inch water main in Battle Creek from Boone to Kuebler as shown in the Water System Master Plan. The main shall connect to the existing 30-inch system in Boone and terminate at the northerly extent of the Battle Creek improvement.

Condition 6: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, complete the 12-inch water system in Battle Creek from Boone to Kuebler by connecting the 12-inch main in Battle Creek to the 10-inch main in the north side of Kuebler.

5. Analysis of Type II Site Plan Review Approval Criteria

SRC 163.070(b) states:

Approval of a Type II Site Plan Review application shall be granted if the Planning Administrator finds that:
(1) The application has met all applicable standards of the Salem Revised Code, or the application has met all standards requiring exercise of discretion or legal judgment necessary to grant an appropriate deviation, including approval of a concurrent zoning adjustment consistent with SRC Chapter 116;
(2) The transportation system provides for the safe, orderly, and efficient circulation of traffic into and out of the proposed development, and negative impacts to the transportation system are mitigated adequately;
(3) Parking areas and driveways are designed to facilitate safe and efficient movement of vehicles, bicycles, and pedestrians; and
(4) The proposed development will be adequately served with City water, sewer, storm drainage, and other utilities appropriate to the nature of the development.

Criterion 1:

The application has met all applicable standards of the Salem Revised Code, or the application has met all standards requiring the exercise of discretion or legal judgment necessary to grant an appropriate deviation, including approval of a concurrent zoning adjustment consistent with SRC Chapter 116.

Finding: The proposed use of the property includes a 23,100 square foot medical office building, a 15,015 square foot medical office building, and 191 parking spaces. The proposal meets or can meet all applicable standards.

Zoning:
The subject property was split-zoned CO (Commercial Office) and CR (Retail Commercial) through Zone Change Case No. 09-3. At that time, the property consisted of two tax lots (Marion County Assessor Map and Tax Lot 083W11D 00600 and 083W12C 00702) as shown on Attachment 6. The conceptual site plan submitted for the zone change (Attachment 7) designated the southwestern 3.86 acres adjacent to Boone Road SE as CO, the northern area adjacent to Kuebler Boulevard SE as CR, and the eastern area including a proposed accessway as CR; a condition of approval required that the applicant provide separate legal descriptions of the area within the CO zone and the area within the CR zone at the time of building permit. A series of property line adjustments has moved the eastern boundary of Tax Lot 083W12C 00702 to the west so that it is now west of the proposed accessway, so the accessway will be constructed adjacent to the western boundary of Tax Lot 083W12C 01900. The proposed site plan for the current application depicts the boundary between the zones in substantially the same location as on the conceptual site plan for ZC09-3 and indicates that both medical office buildings and the majority of the parking spaces will be located within the CO zone. The proposed accessway to Boone Road SE and a small parking area will be located within the CR zone. Development of the property is subject to the provisions of the CO zone district (SRC Chapter 150) and CR zone district (SRC Chapter 152) and all other applicable provisions of the Salem Revised Code.

Use (SRC Chapters 150 and 152):
The Salem Zoning Code classifies land use with reference to the Standard Industrial Classification (SIC) Manual.

Staff Response: The proposed use of the property is classified under SIC 801, offices of physicians, and is a permitted use in the CO zone pursuant to SRC 150.020(f)(15) and in the CR zone pursuant to SRC 152.020(f)(20).

Height (SRC Chapter 152.060):
Within a CO district, non-residential buildings and structures erected, altered, or enlarged shall not exceed 70 feet in height.

Staff Response: The proposed building heights do not exceed 35 feet and are consistent with this standard.

Lot area and dimensions (SRC 150.070 and SRC 152.070):
The minimum lot area in the CO zone for nonresidential uses, except those specified in SRC 150.020(g) (public administration), is 6,000 square feet unless otherwise specifically provided in this zoning code. There are no minimum lot area or dimensions requirements in a CR district, except for the minimum street frontage requirement of 16 feet in SRC 130.260.

Staff Response: The existing and proposed lot areas, after the pending property line adjustments, exceed 6,000 square feet and the lots have more than 16 feet of frontage. The proposal meets the standards.

Lot Coverage (SRC 150.100):
Within a CO district, total lot coverage shall not exceed 60 percent. There is no lot coverage standard in the CR district.

Staff Response: The buildings total 38,115 square feet within the 3.86-acre (168,142-square foot) CO zone. Lot coverage is approximately 23 percent, meeting the standard.

Landscaping, Bufferyards, and Setbacks (SRC Chapters 132, 150, and 152):
Chapter 132 provides that where the construction of or addition to a structure or vehicular or pedestrian use area increases the total area of the lot covered by structures, paving, or both by more than fifty (50) percent, then: (1) the entire lot shall meet the landscaping requirements of this zoning code; and (2) bufferyards shall be provided as required in SRC 132.220 if the use, as defined in SRC Table 132-1, of the proposed expansion is of greater impact than the abutting use.

SRC 130.270 provides that, where two or more separate lots are combined under single ownership to accommodate a single development, the entire combined area shall be considered as a single lot for purposes of this zoning code. Tax lots 083W11D 00600 and 083W12C 00702 are both owned by M and T Partners Inc and will accommodate a single development with shared parking facilities; therefore, the entire combined area shall be considered a single lot. The proposed access to the medical office building development will be located on Tax lot 083W12C 01900, which is owned by Pacific Realty Associates LP along with three adjacent parcels 083W12C 01800, 083W12C 02100, and 083W12C 02000; these four CR-zoned parcels will accommodate a retail development and shall be considered as a single lot.

In the CO district, all required yards, except rear and side yards abutting an alley, and all required bufferyards and vehicular use areas shall be landscaped and screened as required in SRC Chapter 132 (SRC 150.110). In the CR district, all required yards adjacent to a street and all required vehicular use areas shall be landscaped and screened as required in SRC Chapter 132 (SRC 152.110).

SRC 132 requires that all required landscape areas shall be planted with one (1) plant unit per 20 square feet of area. Landscape and irrigation plans will be reviewed for conformance with Chapter 132 at the time of building permit review. Required landscaping shall be installed when sites are being developed, unless seasonal conditions or temporary site conditions make installation impractical at that time. In such cases, a performance guarantee covering the value of the landscaping and installation shall be posted with the City as prescribed by SRC 132.180. Planting and installation of all landscaping shall be inspected and approved prior to the issuance of the Certificate of Occupancy, except a Certificate of Occupancy permit may be issued prior to complete installation of all required landscaping if a performance guarantee equal to 100 percent of the cost of plant materials and labor as determined by the Planning Administrator is filed with the City assuring such installation within twelve months after the Certificate of Occupancy is issued.

The following is a list of applicable setbacks, bufferyards, and landscaping adjacent to surrounding uses:

North / Right-of-Way for Kuebler Boulevard SE:
Adjacent to the north is the right of way for Kuebler Boulevard SE, classified as a parkway. The subject property is zoned CR along the Kuebler Boulevard SE right-of-way. Along the full extent of each lot line adjacent to a street there shall be a required yard five feet in depth, unless a greater landscaped strip adjacent to vehicular use area is prescribed. No buildings are proposed in the CR zone at this time. A landscaped strip

of six to ten feet in width shall be provided on the property between the vehicular use area and the right-of-way. The proposed parking area is located more than 120 feet from the right-of-way.

South / Right-of-Way for Boone Road SE:
Adjacent to the south is the right-of-way of Boone Road SE, classified as a collector. The subject property is zoned CO along the Boone Road SE right-of-way. Along the full extent of each front lot line and lot line adjacent to a street there shall be a required yard twelve feet in depth, all required bufferyards and vehicular use areas shall be landscaped and screened as required in SRC Chapter 132, and parking areas shall have a minimum required yard adjacent to a street of 12 feet. The proposed buildings are located at least 22 feet from the future right-of-way, the proposed solid waste area is located 20 feet from the future right-of-way, and the proposed parking area is 35 feet from the future right-of-way.

West / Right-of-Way for Battle Creek Road SE:
Adjacent to the west is the right-of-way of Battle Creek Road SE, classified as a minor arterial. The subject property is zoned CO along the southern portion of the Boone Road SE right-of-way. Along the full extent of each front lot line and lot line adjacent to a street there shall be a required yard twelve feet in depth, all required bufferyards and vehicular use areas shall be landscaped and screened as required in SRC Chapter 132, and parking areas shall have a minimum required yard adjacent to a street of 12 feet. The proposed building is located 23 feet from the future right-of-way.

The subject property is zoned CR along the northern portion of the Boone Road SE right-of-way. Along the full extent of each lot line adjacent to a street there shall be a required yard five feet in depth, unless a greater landscaped strip adjacent to vehicular use area is prescribed. No buildings are proposed in the CR zone at this time. A landscaped strip of six to ten feet in width shall be provided on the property between the vehicular use area and the right-of-way. The proposed parking area is located 20 feet from the future right-of-way.

East / Vacant commercial property in CR zone:
Adjacent to the east is a vacant CR-zoned property. For buildings not more than 35 feet in height in the CO zone, the minimum required rear and side yard is the greater of five feet or the bufferyard setbacks required in SRC 132.220. Unless greater setbacks or bufferyards apply, a minimum five-foot-wide landscaped strip is required between the vehicular use area and the adjacent property line. The proposed medical office (SIC 80) use is a light impact and the abutting property is vacant commercial land. No bufferyard is required between a light impact use and a vacant commercial use; therefore, the minimum required yard or landscaped strip is 5 feet. In the CO-zoned area, the site plan indicates a ten-foot-wide landscaped area and six-foot-wide sidewalk between parking spaces and the east property line and a 24-foot-wide landscaped area and seven-foot-wide sidewalk between the nearest building and the east property line. In the CR-zoned area, no buildings are proposed at this time, and the site plan indicates that the vehicular use area is over 350 feet from the east property line.

Staff Response: The proposed development conforms to the applicable setback, bufferyard, and landscaping requirements of the Salem Revised Code.

Parking lot landscaping:
SRC 132.230(a) requires that parking areas are to be separated from the exterior wall of a structure by a five-foot, landscaped strip or a paved pedestrian walkway.

Staff Response: The proposed site plan indicates pedestrian walkways and landscaped strips exceeding the minimum of five feet in width, meeting this standard.

SRC 132.230(d)(3) requires interior parking lot landscaping for any vehicular use area of 12 parking spaces or 5,000 square feet of pavement, whichever is greater. A minimum of 8% of the parking lot interior must be landscaped for the proposed parking area, which is greater than 50,000 square feet in area. Deciduous shade trees shall be planted within all parking lots on the basis of one tree for each 12 parking spaces. The required trees may be clustered in planter bays or islands but shall be located throughout the parking area to divide and break up expanses of paving and long rows of parking spaces and to create a canopy effect. Planter bays or islands containing trees shall have a minimum planting area of 25 square feet, and shall have a minimum width of five feet measured from the back of the curb.

Staff Response: The site plan includes landscaping that exceeds the minimum of eight percent and adequate planter bays and islands for the required shade trees, meeting these standards.

Off Street Parking and Loading (SRC Chapter 133):
Parking spaces:
The applicant's site plan indicates a gross floor area of approximately 38,115 square feet in the two medical office buildings. SRC Chapter 133, Table 133-1 requires a minimum parking ratio of one (1) space per 350 square feet of floor area for uses in SIC 80 (health services) other than nursing and personal care facilities (SIC 805) and hospitals (SIC 806). A total of 109 spaces are required. Off-street parking spaces shall not exceed 1.75 times the amount required under Table 133-1 if such amount is more than 20.

Staff Response: The applicant's site plan indicates 191 parking spaces on the site, the maximum allowed. Adequate site parking is provided for the proposed uses.

Bike Spaces:
SRC Table 133-1 requires bicycle parking on site for all new multiple family residential developments, commercial, industrial and institutional uses. The minimum requirement in Table 133-1 for the proposed medical office use (SIC 80) is the greater of four spaces or one bicycle space per 3500 square feet of floor area.

Staff Response: For the 23,100 square foot building, 7 bicycle parking spaces are required, and the site plan indicates that seven spaces are provided. For the 15,015 square foot building, four bicycle parking spaces are required, and the site plan indicates that four spaces are provided. The proposed development meets the standard.

Loading Spaces:
Chapter 133 Table 133-2 requires that off-street loading areas shall be provided and maintained for commercial non-office buildings. For a commercial office building between 5,000 and 59,000 square feet, a minimum of one (1) loading space at least 12 feet wide by 19 feet long by 12 feet high is required.

Staff Response: The proposed site plan requires one uncovered loading space with dimensions of 12 feet in width and 19 feet in length for the western medical office building and one uncovered loading zone 12 feet in width and 40 feet in length for the eastern medical office building. The proposal meets the standards.

Open Storage (SRC 150):
Within a CO district, outdoor storage of materials and equipment is prohibited except in conjunction with residential uses where the storage is screened from adjacent streets and properties by a sight-obscuring fence, wall, or hedge.

Staff Response: The proposed site plan indicates no outdoor storage, thereby meeting this standard.

Solid Waste Service Area (SRC Chapter 130):
Solid waste service areas are to provide for the safe and convenient collection of solid waste, recyclable and compostable materials by the local solid waste collection franchisee. Pursuant to SRC 130.601-130.609, solid waste service area design standards shall apply to all new solid waste, recycling and compostable service areas, where use of a solid waste, recycling and compostable receptacle one cubic yard or larger is proposed, and to any change to an existing solid waste service area for receptacles one cubic yard or larger.

Staff Response: The site plan indicates a solid waste service area that conforms to the applicable standards.

Natural Resources:

Trees: The City's tree preservation ordinance (SRC Chapter 68) provides that no person shall remove a significant tree (Oregon White Oak greater than 24 inches in diameter at breast height) or a tree or native vegetation in a riparian corridor, unless the removal is excepted under SRC 68.080, undertaken pursuant to a permit issued under SRC 68.090, undertaken pursuant to a tree conservation plan approved under SRC 68.100, or permitted by a variance granted under SRC 68.130. In addition, SRC 68.070 applies to lots or parcels 20,000 square feet or greater or contiguous lots or parcels under the same ownership that are twenty thousand square feet or greater and states that, unless undertaken pursuant to a permit issued under SRC 68.090, no person shall, prior to development and within a single calendar year, remove more than five trees, or more than fifteen percent of the trees, whichever is greater, and no more than fifty percent of the trees on such lot or parcel or contiguous lots or parcels may be removed prior to development within any five consecutive calendar years. SRC Chapter 86 requires a permit to remove trees growing in or upon any public street.

Staff Response: Prior to submitting the Site Plan Review and UGA application for development of the subject property, the owners of the entire property bounded by Kuebler Boulevard SE, 27th Avenue SE, Boone Road SE, and Battle Creek Road SE obtained a tree removal permit to remove up to 15 percent of the trees on the property. No Oregon White Oaks greater than 24 inches in diameter at breast height or trees or native vegetation in riparian corridors were approved for removal. The applicant also received a street tree removal permit to remove trees within the Kuebler Boulevard SE right-of-way. All trees approved for removal were located outside of the project area indicated on the site plan for this application. Future tree removal will be subject to SRC Chapter 68 and SRC Chapter 86.

Wetlands: Grading and construction activities within jurisdictional waters of the state are regulated by the Oregon Department of State Lands (DSL) and US Army Corps of Engineers. State and Federal wetlands laws are also administered by the DSL and Army Corps, and potential impacts to jurisdictional wetlands are addressed through application and enforcement of appropriate mitigation measures. The Salem-Keizer Local Wetland Inventory (LWI) does not identify any wetlands or waterways within the proposed project area for this application. Wetlands have been identified approximately 300 feet east of the proposed project area, on tax lots 083W12C 01900 and 083W12C 02000, and grading plans for that area require protection of the wetlands.

Landslide Susceptibility: The site contains areas of 2 mapped landslide hazard points. There are three (3) activity points assigned to the development of commercial or industrial buildings. Pursuant to the requirements of the City's Landslide Hazard ordinance (SRC Chapter 69), the cumulative total of 5 points indicates a moderate landslide risk, and a geological assessment is required. The applicants submitted a geotechnical assessment with this application and Public Works approved it.

Previous Land Use Actions

In Zone Change Case No. 09-3 (ZC09-3), the Hearings Officer granted a request to change the zoning district from CO (Commercial Office) and RA (Residential Agriculture) to CR (Commercial Retail) and CO (Commercial Office) for property approximately 9.96 acres in size and located on the east side of Battle Creek Road SE between Kuebler Boulevard SE and Boone Road SE (Marion County Assessor's map and tax lot number 083W11D 00600 and 083W12C 00702). The decision was subject to three conditions of approval: (1) Prior to development obtain a new UGA permit for the subject property; (2) Construct the mitigating street improvements specified in the final approval of Comprehensive Plan Change/Zone Change 06-6; and (3) At the time of building permit, the applicant shall provide separate legal descriptions for the property zoned CR (Commercial Retail) and CO (Commercial Office), respectively.

The current application was submitted to obtain the required new UGA permit to comply with Condition 1 of ZC09-3. The proposed mitigating street improvements and deferral agreement, discussed in the analysis of Criterion 2 below, will comply with Condition 2. To ensure compliance with Condition 3 of ZC09-3, the following condition or approval is required:

Condition 7: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall provide separate legal descriptions for the property zoned CR (Commercial Retail) and CO (Commercial Office).

Property Line Adjustment Cases PLA12-03 and PLA12-04 were approved on July 17, 2012. The proposed eastern medical office building would cross the existing property line between tax lots 083W11D 00600 and 083W12C 00702. When PLA12-03 and PLA12-04 are recorded, they will result in the configuration depicted by the "Pending P/L" notations on the site plan, and the eastern medical office building will be located on a rectangular 2.6 acre parcel and the western medical office building will be located on an L-shaped 4.8-acre parcel. To ensure that the eastern medical office building does not cross a property line, the following condition is required:

Condition 8: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall record Property Line Adjustment No. 12-03 and Property Line Adjustment No. 12-04.

Historic Property Status
The subject property is not identified as a historic resource.

Criterion 2:

The transportation system provides for the safe, orderly, and efficient circulation of traffic into and out of the proposed development, and negative impacts to the transportation system are mitigated adequately.

Finding: The Transportation Impact Analysis (TIA) specifies that a right-turn lane is warranted from eastbound Kuebler Boulevard to southbound Battle Creek Road. The existing street system is adequate to serve the proposed development with the conditions of approval discussed in the analysis of the UGA requirements.

Zone Change 09-3 established infrastructure requirements for the subject property consistent with those required for CPC/ZC06-6 on the neighboring parcel. SRC 113.205(b)(11)(A) authorizes the Planning Administrator to allow deferral of all or a portion of required public improvements until a stated time or until required by council, whichever is earlier. Consistent with the applicant's TIA, the findings below specify whether the CPC/ZC06-6 conditions are to be satisfied with development of UGA Phase 1 or are recommended to be completed in a later phase as specified within a deferral agreement.

CPC/ZC 06-6 Condition 1: The intersection of Battle Creek and Boone Roads SE shall be improved to include a traffic signal with dedicated westbound left-turn lane, westbound right-turn lane and an eastbound left-turn lane. The southbound left-turn lane shall be lengthened to provide a minimum of 300 feet of storage.

Staff Response: The westbound left-turn lane and right-turn lane on Boone Road and the southbound left-turn lane on Battle Creek shall be constructed as a condition of building permit issuance for UGA Phase 1. The eastbound left-turn lane on Boone Road and the traffic signal shall be constructed as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase.

CPC/ZC 06-6 Condition 2: The intersection of Battle Creek Road SE and Kuebler Boulevard shall be improved to provide exclusive eastbound right-turn lane and a northbound left-turn lane with a minimum of 300 feet of storage. To provide the necessary northbound left-turn storage at this intersection with the southbound left-turn lane storage at Battle Creek and Boone Roads, side-by-side left-turn lanes shall be constructed as approved by the Public Works Director.

Staff Response: All improvements shall be constructed as a condition of building permit issuance for UGA Phase 1.

CPC/ZC 06-6 Condition 3: The south side of Kuebler Boulevard shall be widened to meet City of Salem Standards with curb, sidewalk and bike lanes. The widening shall extend from 1500 feet west of Battle Creek Road SE to the Interstate 5 ramps to provide an additional lane for a total of two eastbound lanes.

Staff Response: All improvements shall be constructed as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase.

CPC/ZC 06-6 Condition 4: Dual left turn lanes shall be constructed on eastbound and westbound Kuebler Boulevard at 27th Avenue SE. Only one eastbound left-turn lane will be striped as there is only one receiving lane. For the westbound left turn lanes, an additional receiving lane shall be constructed which will drop immediately south of the subject property's driveway on 27th Avenue. The intersection of Kuebler Boulevard at 27th Avenue SE shall also be improved to provide and exclusive eastbound right-turn lane.

Staff Response: All improvements shall be constructed as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase.

CPC/ZC 06-6 Condition 5: In addition to boundary street improvements required by Salem Revised Code (SRC) 77.150, the developer shall coordinate with the city and use best practices for design and location of site access and shall construct left-turn lanes and pedestrian refuge islands where appropriate.

Staff Response: All improvements shall be constructed as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase.

CPC/ZC 06-6 Condition 6: The developer shall commit up to $5,000 for traffic calming devices (such as speed humps or other traffic calming measures) to be used in the residential neighborhood south of the proposed development if a need is identified. The

Neighborhood Traffic Management Program is the process used to identify traffic calming needs.

Staff Response: Construction shall be completed or performance security shall be provided as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase.

CPC/ZC 06-6 Condition 7: The developer shall provide right-in access from Kuebler Boulevard with a design that minimizes impact to through vehicles and provides a safe driveway crossing for bicycle and pedestrian traffic the final design of which to be approved by the Salem Public Works Director. In addition, the developer shall complete the widening of the eastbound lanes of Kuebler Boulevard west to Commercial Street. This additional widening of approximately 1300 feet of Kuebler Boulevard is considered as payment for a grant of access on Kuebler Boulevard to allow a right-in driveway on the Subject Property.

Staff Response: All improvements shall be constructed as a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase.

CPC/ZC 06-6 Condition 8: The developer shall offset their access driveway along Boone Road SE from Cultus Avenue at a location approved by the Salem Public Works Director.

Staff Response: This requirement will be satisfied with the proposed site plan and building permit issuance for UGA Phase 1. The driveway is appropriately located a safe distance from Battle Creek Road to accommodate storage for turning movements while being offset from Cultus Avenue enough to reduce impacts to the adjacent neighborhood.

CPC/ZC 06-6 Condition 16: Prior to issuance of a certificate of occupancy for any building on the subject property the following traffic improvements shall be completed: 1) The funded City CIP project to construct improvements on Kuebler Boulevard as identified in the applicant's September 2006 TIA; 2) all traffic mitigation improvements required to be constructed by the Developer as conditions of approval in this decision, and; 3) In addition to other traffic mitigation improvements required as conditions of approval, the Developer shall construct an exclusive right-turn lane at the westbound Kuebler Boulevard intersection with 27th Avenue. The traffic improvements that the Developer is responsible for, in addition to the right-turn lane at westbound Kuebler and 27th Avenue, are as specified in conditions of approval 1 through 7 of this decision.

Staff Response: The improvements specified in the conditions of approval for UGA Phase 1 shall be completed prior to certificate of occupancy per SRC 66.050(b) for any building in UGA Phase 1. As stated above, other improvements are deferred as authorized in SRC 113.205(b)(11)(A) and described in the findings above.

Condition 16 for CPC/ZC 06-6 required all of the improvements in Conditions 1 through 7 and Condition 16 prior to issuance of a certificate of occupancy for any building on the subject property re-zoned to CR through CPC/ZC 06-6, which encompassed tax lots 083W12C 01800, 083W12C 01900, 083W12C 02000, and 083W12C 02100. The Hearings Officer's findings for Zone Change 09-3 (for tax lots 083W11D 00600 and 083W12C 00702) stated:

> The Traffic Impact Analysis (TIA) submitted for the abutting property's Comprehensive Plan change and Zone Change (CPC/ZC 06-6) encompassed developments on the subject property. In that application, the applicant stated that those 18.4 acres and the 9.96 acres of the subject property would be developed together. The applicant since purchased the subject property and still plans to develop the properties together. Therefore, the subject property shall be held to the same conditions of approval for street improvements as the abutting 18.4 acres and the following condition shall apply:
>
> > Condition 2: Construct the mitigating street improvements specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

When Condition 16 was adopted by reference through Condition 2 of Zone Change 09-3, the applicant (Pacific Realty Associates LP (PacTrust)) anticipated that the CO-zoned and CR-zoned areas of tax lots 083W11D 00600 and 083W12C 00702 would be developed together with the retail buildings on the other four tax lots.

Since that decision, Pacific Realty Associates LP (PacTrust) sold tax lots 083W11D 00600 and 083W12C 00702 to a wholly owned subsidiary, M and T Partners Inc, which determined that development of the medical office buildings on the CO-zoned area is feasible prior to development of retail buildings in the CR-zoned area. SRC 113.205(b)(11)(A) states:

> If the dedication of right-of-way or public improvements is required as a condition under this section, such dedication or improvements shall be the obligation of the applicant but shall be deferred until the property owner applies for a building permit or certificate of occupancy, whichever is earlier. Upon justification by the applicant, the planning administrator may allow further deferral of all or a portion of public improvements required as a condition under this section, beyond building permit or certificate of occupancy until a stated time or until required by council, whichever is earlier. An applicant seeking deferral under this section shall sign an improvement deferral agreement which specifies the terms of deferral. Said agreement shall be in a form approved by the city attorney and shall be filed in the deed records of the appropriate county.

The applicant is requesting that the Planning Administrator determine that only those mitigating street improvements that are proportionate to the proposed development in the CO-zoned area shall be required prior to certificates of occupancy for those buildings and that adequate justification exists for deferral of the other mitigating street improvements for the future development on the CR-zoned areas of the subject property and abutting property. Staff recommends phasing the improvements as described above. The Planning Administrator finds that adequate justification exists for this deferral. Public Works staff calculated that the proposed CO-zone development of 38,115 square feet would generate approximately 1,409 average daily trips. Condition 14 of CPC/ZC 06-6 limited the total amount of gross leasable area (GLA) for retail uses and medical/dental offices on the combined properties to 299,000 square feet. The proposed 38,115 square feet in medical offices would comprise only 13 percent of the total GLA on the properties, and the CO-zoned area of 3.86 acres would comprise approximately 14 percent of the total land area of 28.48 acres.

In order to ensure compliance with the mitigating street improvements and deferral requirements, the following conditions of approval are required:

Condition 9: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, complete all remaining mitigating street improvements required as a condition of approval for Zone Change 09-3 and specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

Condition 10: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall sign an improvement deferral agreement which specifies the terms of the deferral as outlined in Conditions 1, 2, 3, 4, and 9. Said agreement shall be in a form approved by the city attorney and shall be filed in the deed records of Marion County.

Criterion 3:

Parking areas and driveways are designed to facilitate safe and efficient movement of vehicles, bicycles, and pedestrians.

Finding: The driveway access onto Boone Road SE meets minimum spacing requirements in the Public Works Design Standards to provide for safe turning movements into and out of the property. The proposed location meets the requirement of CPC/ZC 06-6 Condition 8 to offset the access driveway from Cultus Avenue SE to reduce impacts to the adjacent residential neighborhood and is appropriately located a safe distance from Battle Creek Road to accommodate storage for turning movements. This access drive will include a sidewalk along its west side to provide pedestrian access from the street. Internal parking lot aisles and parking spaces meet the applicable standards. Internal sidewalks and marked pedestrian pathways facilitate pedestrian safety. Bicycle parking is provided near each building in the amount and locations required by the Salem Revised Code.

The driveway serving the CO-zoned development is located on an abutting property under separate ownership. To ensure that legal access is provided, the following condition of approval is required:

Condition 11: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall provide a copy of a recorded access easement across the abutting property (Marion County Assessor Map and Tax Lot 083W12C 01800), including a legal

description that specifies the location of the easement and its dimensions in conformance with the approved site plan.

Criterion 4:

The proposed development will be adequately served with City water, sewer, storm drainage, and other utilities appropriate to the nature of the development.

Finding: The Public Works Department has reviewed the applicant's preliminary utility plan for this site. The sewer and storm infrastructure are available within surrounding streets and appear to be adequate to serve the proposed development. Required water improvements are described in Conditions 5 and 6 in the UGA section of this report.

6. Based upon review of SRC Chapters 66 and 163, the applicable standards of the Salem Revised Code, the findings contained herein, and due consideration of comments received, the site plan review and urban growth area development permit application complies with the requirements for an affirmative decision.

ORDER:

Final approval of Type II Site Plan Review-Urban Growth Area Development Permit Case No. SPR-UGA12-11 is hereby GRANTED subject to SRC Chapter 163, SRC Chapter 66, the applicable standards of the Salem Revised Code, conformance with the approved site plan included as Attachment 2, and the following conditions of approval:

Condition 1: As a condition of building permit issuance for UGA Phase 1, construct a minimum 15-foot-wide half-street improvement along the entire frontage on the development side of Boone Road SE (Boone). The street and right-of-way width shall also accommodate a westbound right-turn lane and a westbound left-turn lane at Battle Creek Road SE (Battle Creek).

Condition 2: As a condition of building permit issuance for UGA Phase 1, construct a minimum 23-foot-wide half-street improvement on the development side of Battle Creek from Boone Road to Kuebler Boulevard SE (Kuebler). The street and right-of-way width shall accommodate a northbound left-turn lane at Kuebler with a minimum 300 feet of storage and a southbound left-turn lane at Boone with a minimum 300 feet of storage.

Condition 3: As a condition of building permit issuance for UGA Phase 1, construct an exclusive eastbound right-turn lane on Kuebler at Battle Creek.

Condition 4: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, construct a minimum 40-foot-wide half-street improvement along the entire frontage on the development side of Kuebler,. This project meets the criteria for fee-in-lieu of improvement per SRC 66.595.

Condition 5: As a condition of building permit issuance for UGA Phase 1, construct a 12-inch water main in Battle Creek from Boone to Kuebler as shown in the Water System Master Plan. The main shall connect to the existing 30-inch system in Boone and terminate at the northerly extent of the Battle Creek improvement.

Condition 6: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, complete the 12-inch water system in Battle Creek from Boone to Kuebler by connecting the 12-inch main in Battle Creek to the 10-inch main in the north side of Kuebler.

Condition 7: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall provide separate legal descriptions for the property zoned CR (Commercial Retail) and CO (Commercial Office).

Condition 8: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall record Property Line Adjustment No. 12-03 and Property Line Adjustment No. 12-04.

Condition 9: As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase, complete all remaining mitigating street improvements required as a condition of approval for Zone Change 09-3 and specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

Condition 10: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall sign an improvement deferral agreement which specifies the terms of the deferral as outlined in conditions 1, 2, 3, 4, and 9. Said agreement shall be in a form approved by the city attorney and shall be filed in the deed records of Marion County.

Condition 11: Prior to the issuance of the building permit for the first building in UGA Phase 1, the applicant shall provide a copy of a recorded access easement across the abutting property (Marion County Assessor Map and Tax Lot 083W12C 01800), including a legal description that specifies the location of the easement and its dimensions in conformance with the approved site plan.

The rights granted by the attached Urban Growth Area Development Permit Preliminary Declaration decision must be exercised by September 25, 2014 or this approval shall be null and void. The rights granted by the attached Type II Site Plan Review decision must be exercised by September 25, 2016 or this approval shall be null and void.

This decision is final unless written appeal from an aggrieved party is filed with the City of Salem Planning Division, Room 320, 555 Liberty Street SE, Salem OR 97301, not later than **September 24, 2012, by 5:00 p.m.** All persons entitled to notice of the decision may appeal the decision. The appeal must state where the decision failed to conform to the provisions of the Urban Growth Management Ordinance (SRC Chapter 66) or the Site Plan Review Ordinance (SRC Chapter 163). The appeal must be filed in duplicate with the City of Salem Planning Division. The appeal fee must be paid at the time of filing. If the appeal is untimely and/or lacks the proper fee, the appeal will be rejected. The Salem City Council will review the appeal at a public hearing. After the hearing, the City Council may amend, rescind, or affirm the action, or refer the matter to staff for additional information. The complete case file, including findings, conclusions, and conditions of approval, if any, is available for review at the City of Salem Community Development Dept. in the Vern Miller Civic Center, 555 Liberty St SE, Room 305, Salem, OR 97301. To review the case file or to obtain more information about the appeal process, please contact Pamela Cole at 503-540-2309 or pcole@cityofsalem.net.

Glenn W. Gross
Urban Planning Administrator

Attachments:
(1) Vicinity Map
(2) Site Plan
(3) Utility Plan with UGA Phases
(4) Comments from South Gateway Neighborhood Association
(5) Facts and Findings of the Department of Public Works
(6) Zone Change 09-3 Vicinity Map
(7) Zone Change 09-3 Conceptual Site Plan

Prepared by Pamela Cole, Planner II

Application Deemed Complete: July 27, 2012
Notice of Decision Mailing Date: September 7, 2012
Decision Effective Date: September 25, 2012
State Mandated Decision Date: November 24, 2012

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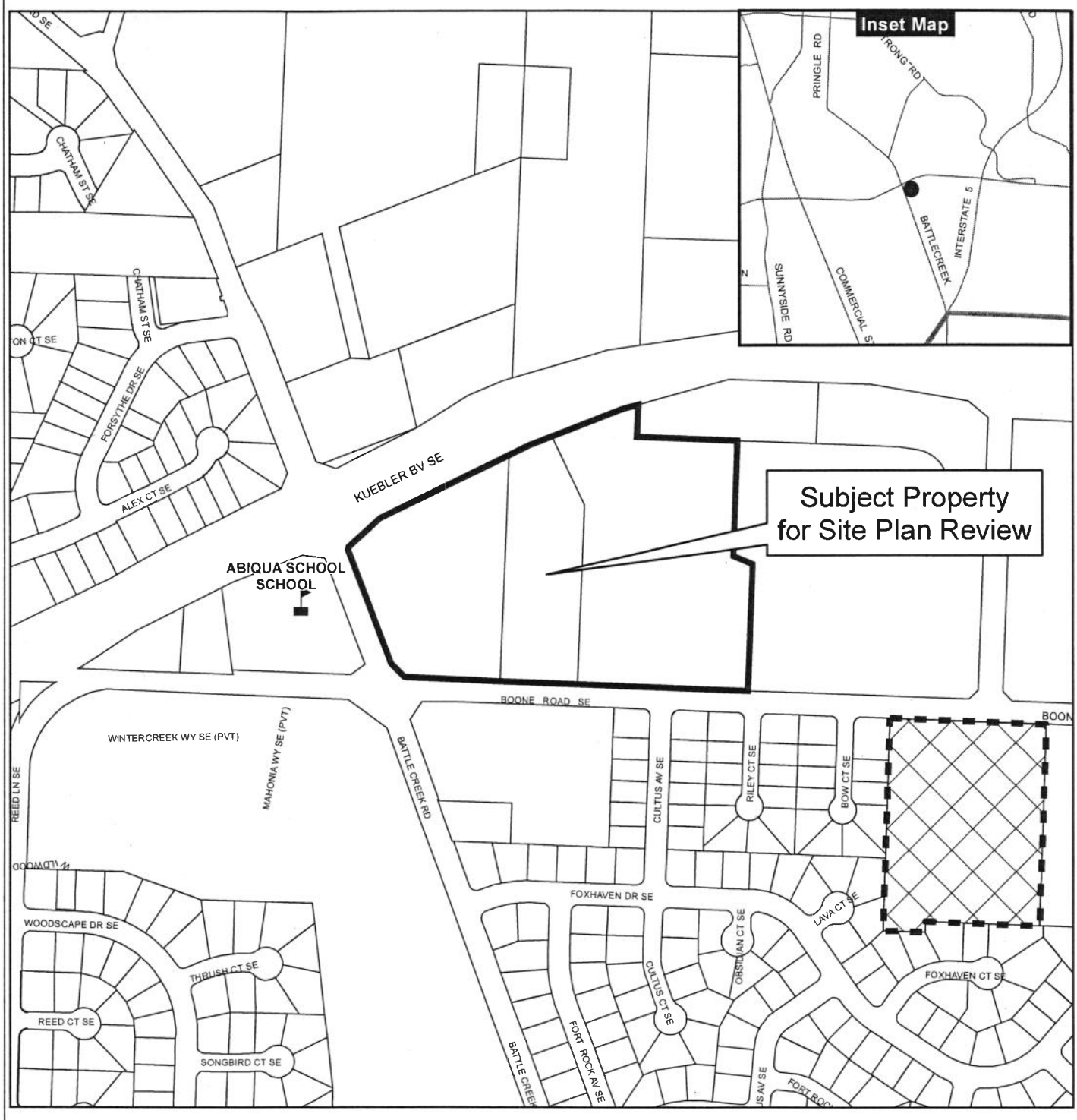
Vicinity Map - Tax Lots
083W12C 00702, 083W11D 00600, 083W12C 01900



Legend

- Taxlots
- Urban Growth Boundary
- City Limits
- Outside Salem City Limits
- Historic District
- Schools
- Parks

0 100 200 400 Feet

CITY OF Salem AT YOUR SERVICE
Community Development Dept.

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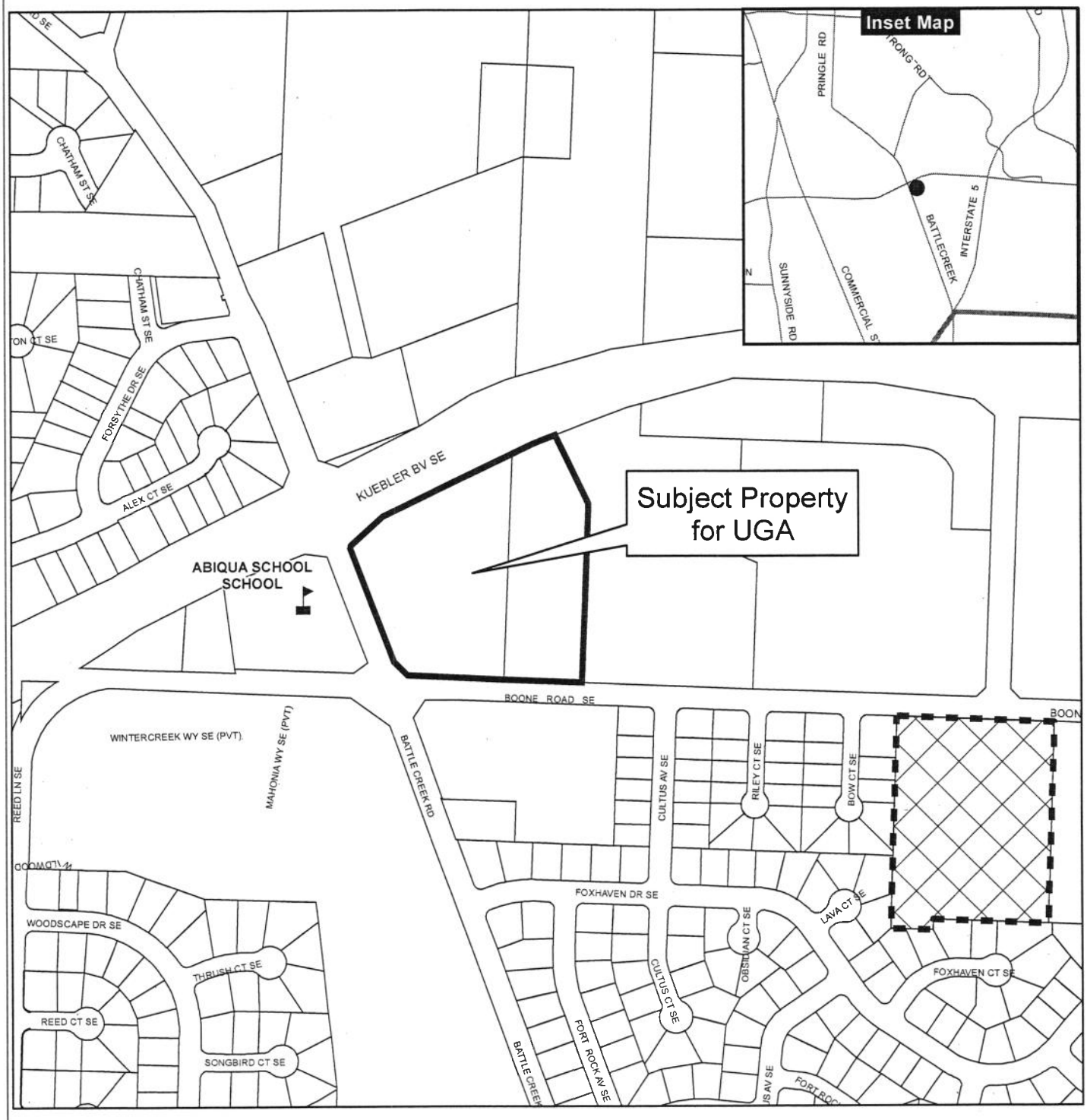
ATTACHMENT 1

Vicinity Map
Tax Lots 083W12C 00702 and 083W11D 00600



Legend

- Taxlots
- Urban Growth Boundary
- City Limits
- Outside Salem City Limits
- Historic District
- Schools
- Parks

0 100 200 400 Feet

CITY OF Salem AT YOUR SERVICE

Community Development Dept.

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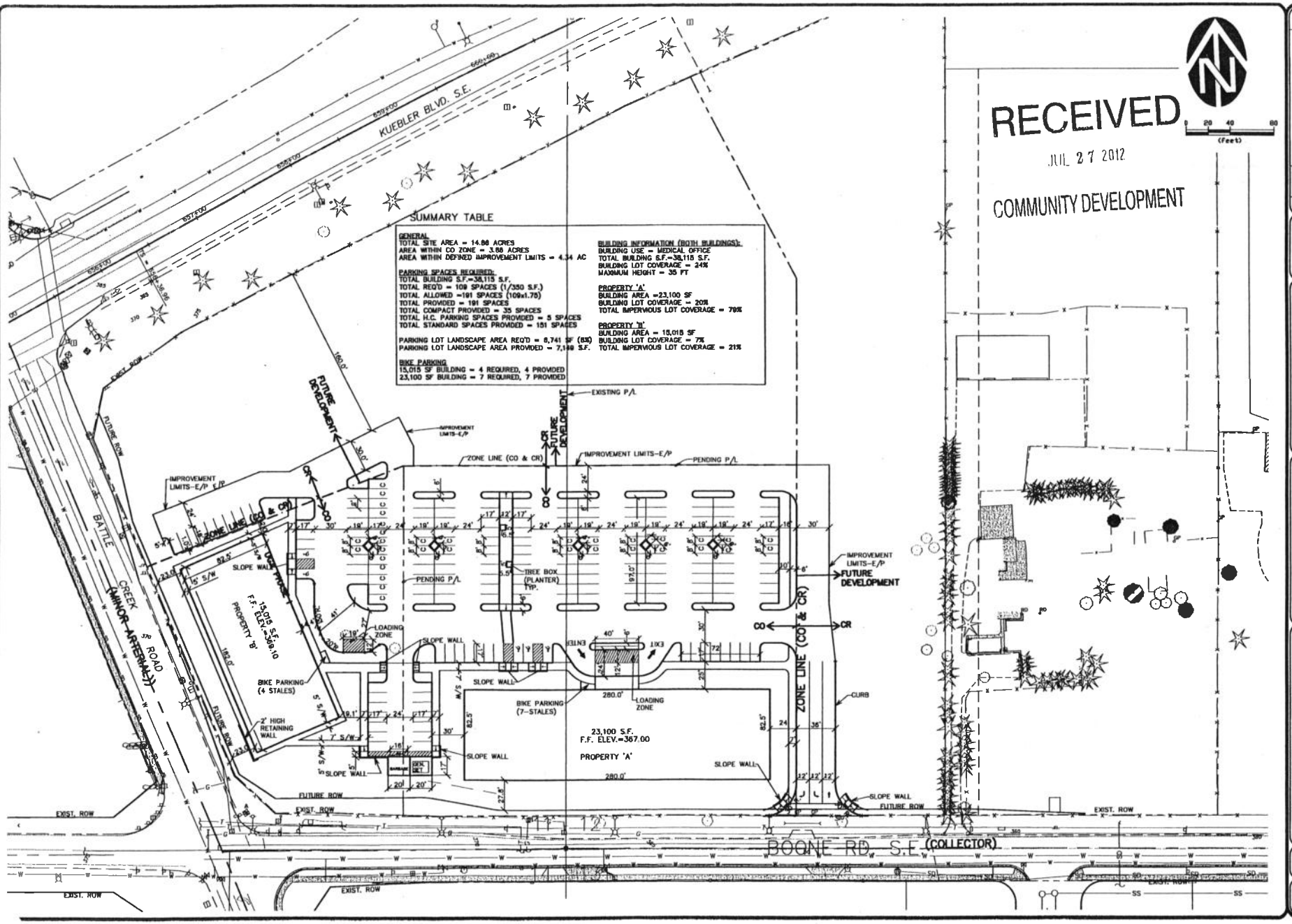


RECEIVED
JUL 27 2012
COMMUNITY DEVELOPMENT

REVIEW

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS

PAC TRUST KUEBLER DEVELOPMENT
MEDICAL OFFICE

OVERALL SITE & DIMENSIONING PLAN

DRAWING
C3.0

JOB NUMBER
2672.XXXX.0

DESCRIPTION
REVISIONS

DATE: JULY 2012

ATTACHMENT 2

ATTACHMENT 3

NEIGHBORHOOD ASSOCIATION
555 LIBERTY ST. SE ROOM 300 SALEM OREGON 97301 • TELEPHONE (503) 588-6261

August 16, 2012

Ms. Pamela Cole, Case Manager
Planning Division
City of Salem
555 Liberty Street, Southeast,
Room 305
Salem, Oregon 97301

Dear Ms. Cole:

Re: Type II Site Plan Review – Urban Growth Area Development Permit (PacTrust)
Case No. SPR-UGA 12-11
2500 Block Boone Road SE
AMANDA Application 12-110419-RP & 12-110418LD

The Land Use and Transportation Committees of the South Gateway Neighborhood Association have reviewed the request to defer construction of some of the mitigating traffic improvements imposed as conditions of approval for Zone Change Case No. 09-3 and specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

SGNA has been informed that the staff of the Public Works Development Services and Traffic Engineering are reviewing the site plan in light of these conditions and determining which improvements are required for the current proposal and which may be deferred. Of course, SGNA defers to their expertise in this area, but prefers that the following improvements be completed now and not deferred to a later date:

1. The intersection of Battle Creek and Boone Roads, SE be improved to include a traffic signal with a dedicated westbound left-turn lane, westbound

right-turn lane and an eastbound left-turn lane. This becomes even more critical because of the City's recent approval of the Wildwood Company's intentions to re-purpose the Old Pringle School property. The Association recommends that PacTrust be required to pay only their proportionate amount for these improvements.

2. The widening and improvement of the south side of Kuebler Boulevard be completed in its entirety at a logical and reasonable time as determined by the Public Works Development Services and Traffic Engineering Departments, but no later than the completion of the State of Oregon's planned improvements to the I-5 and Kuebler Road interchange.

In the alternative, if the requested improvements above to the south side of Kuebler Road are not competed immediately, SGNA requests that PacTrust be required to install a right-turn lane along the eastbound approach to the Kuebler/Battle Creek Road intersection as an interim improvement.

SGNA supports the recommendation of Kittleson & Associates , dated July 13, 2012, that landscaping, signage and new above-ground utilities along the site frontage be located and maintained to provide a clear sight line to the east and west from the current site driveway on Boone Road, SE.

SGNA reserves the right to provide additional comments and concerns to the determinations made by the Public Works Development Services and Traffic Engineering Departments regarding the deferment of construction of some of the mitigating traffic improvements specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

South Gateway Neighborhood Association

Patrick O'Dell, Chairman
Transportation Committee

Stephen C. Withers, Chairman
Land Use Committee

SCW*psw

PUBLIC WORKS

CITY OF Salem AT YOUR SERVICE

MEMO

TO: Pamela Cole, Planner II
Community Development Department

FROM: Glenn J. Davis, P.E., C.F.M., Chief Development Engineer
Public Works Department

DATE: September 5, 2012

SUBJECT: **PUBLIC WORKS RECOMMENDATIONS**
SPR-UGA NO. 12-11 (12-110419)
2500 BLOCK OF BOONE ROAD SE

PROPOSAL:

Consolidated UGA Permit to determine the required public facilities for office and retail development, and Type II Site Plan Review to develop 15,000-square-foot and 23,100-square-foot medical office buildings on properties approximately 7.5 acres in size. The properties are outside the Urban Service Area (USA), and are zoned CO (Commercial Office) and CR (Retail Commercial). Properties are located in the 2500 block of Boone Road SE (Marion County Assessor Map and Tax Lot 083W11D 00600 and 083W12C 00702). The Type II Site Plan Review also includes construction of an accessway on an abutting property approximately 7.5 acres in size, zoned CR (Retail Commercial), and located at 2541 Boone Road SE.

RECOMMENDED CONDITIONS:

1. As a condition of building permit issuance for UGA Phase 1:

   a. Along the entire frontage on the development side of Boone Road SE (Boone), construct a minimum 15-foot-wide half-street improvement. The street and right-of-way width shall also accommodate a westbound right-turn lane and a westbound left-turn lane at Battle Creek Road SE (Battle Creek).

   b. On the development side of Battle Creek from Boone to Kuebler Boulevard SE (Kuebler), construct a minimum 23-foot-wide half-street improvement. The street and right-of-way width shall accommodate a northbound left-turn lane at Kuebler with a minimum 300 feet of storage, and a southbound left-turn lane at Boone with a minimum 300 feet of storage.

   c. Construct an exclusive eastbound right-turn lane on Kuebler at Battle Creek.

Code authority references are abbreviated in this document as follows: *Salem Revised Code* (SRC); *Public Works Design Standards* (PWDS); *Salem Transportation System Plan* (Salem TSP); and *Stormwater Management Plan* (SMP).

ATTACHMENT 5

d. Construct a 12-inch water main in Battle Creek from Boone to Kuebler as shown in the Water System Master Plan. The main shall connect to the existing 30-inch system in Boone and terminate at the northerly extent of the Battle Creek improvement.

2. As a condition of building permit issuance for the first building in UGA Phase 2 or UGA Future Phase:

a. Along the entire frontage on the development side of Kuebler, construct a minimum 40-foot-wide half-street improvement. This project meets the criteria for fee-in-lieu of improvement per SRC 66.595.

b. Complete the 12-inch water system in Battle Creek from Boone to Kuebler by connecting the 12-inch main in Battle Creek to the 10-inch main in the north side of Kuebler.

c. Complete all remaining mitigating street improvements required as a condition of approval for Zone Change 09-3 and specified in the final approval of Comprehensive Plan Change/Zone Change 06-6.

FACTS:

Streets

1. Battle Creek Road SE

a. Existing Conditions – This street has a varied turnpike improvement within a 68-foot right-of-way. The half-width right-of-way on the development side of centerline appears to be 38 feet. There is a slope easement along the full frontage of Battle Creek adjacent to the subject property.

b. Standard –This street is designated as a minor arterial street in the Salem TSP. The standard for this street classification is a 46-foot-wide improvement within a 72-foot-wide right-of-way.

2. Kuebler Boulevard SE

a. Existing Conditions – Kuebler has varied turnpike pavement sections within a varied right-of-way of 180 feet to 150 feet in width. The intersection with Battle Creek is signalized.

b. Standard – This street is designated as a parkway in the Salem TSP. The standard for this classification of street is an 80-foot-wide improvement within a minimum 120-foot-wide right-of-way.

3. Boone Road SE

   a. Existing Conditions – This street has a 12-foot turnpike improvement on the development side and a 17-foot half-street improvement on the opposite side within a varied right-of-way of 60 feet to 68 feet in width.

   b. Standard – This street is designated as a collector street in the Salem TSP. The standard for this street classification is a 34-foot-wide improvement within a 60-foot-wide right-of-way.

4. 27th Avenue SE

   a. Existing Conditions – This street has a 12-foot turnpike improvement on the development side and a 17-foot half-street improvement on the opposite side, within a varied right-of-way of 60 feet to 68 feet in width.

   b. Standard – This street is designated as a collector street in the Salem TSP. The standard for this street classification is a 34-foot-wide improvement within a 60-foot-wide right-of-way.

Storm Drainage

Existing Conditions

a. The subject property is within the Pringle Creek drainage basin.

b. There is a drainage ditch in Battle Creek along the full frontage of the subject property.

c. There is a drainage ditch in Kuebler adjacent to the subject property. There is a grade change where the drainage flows split.

d. Along Boone, there is a drainage ditch on the development side, and 15-inch and 30-inch storm drain lines on the opposite side.

e. Along 27th Avenue SE, there is a 30-inch storm drain line that outfalls into a drainage ditch adjacent to the subject property.

Water

Existing Conditions

a. The subject property is within the S-2 water service level. The adjacent property to the east has portions of S-1 water service level.

b. There are no public water lines in Battle Creek and 27th Avenue SE.

c. There is a 10-inch S-2 water line in Kuebler.

d. There is a 24-inch S-2 water line in Boone.

Sanitary Sewer

Existing Conditions

a. There is no sewer available in Kuebler and Battle Creek.

b. There is a 24-inch public sewer line within a 25-foot easement along the south right-of-way line of Boone.

c. There is a 24-inch public sewer line in 27th Avenue SE.

Parks

Non-residential developments do not generate requirements for new parks.

CRITERIA AND FINDINGS FOR UGA

Analysis of the development based on relevant criteria in SRC Chapter 66 is as follows:

SRC 66.100, "Standards for Street Improvements"

Findings: An adequate linking street is defined as the nearest point on a street that has a minimum 60-foot-wide right-of-way with a minimum 30-foot improvement for local streets or a minimum 34-foot improvement for major streets (SRC 66.100(a)). All streets abutting the property boundaries shall be designed to the greater of the standards of SRC 63.225 and SRC 63.235 and the standards of linking streets in SRC 66.100(c).

Boundary streets are required along the entire frontage of each development phase at the time of building permit issuance as described in the conditions of approval.

SRC 66.110, "Standards for Sewer Improvements"

Findings: The proposed development shall be linked to adequate facilities by the construction of sewer lines and pumping stations, which are necessary to connect to such existing sewer facilities (SRC 66.110). The applicant shall construct the *Salem Wastewater Management Master Plan* improvements and link the site to existing facilities that are defined as adequate under 66.020(a). Sewer mains in 27th Avenue SE and Boone Road SE are adequate to serve the proposed development.

SRC 66.115, "Standards for Storm Drainage Improvements"

Findings: The applicant shall be required to design and construct a storm drainage system at the time of development. The applicant shall provide an analysis that includes capacity calculations, detention requirements, and evaluation of the connection to the approved point of disposal (SRC 63.195). The applicant shall link the on-site system to existing facilities that are defined as adequate under SRC 66.020(a).

SRC 66.120, "Standards for Water Improvements"

Findings: The proposed development shall be linked to adequate facilities by the construction of water distribution lines, reservoirs, and pumping stations that connect to such existing water service facilities (SRC 66.120). The *Water System Master Plan* requires construction of a 12-inch S-2 water line in Battle Creek. Construction of these required facilities and other potential alternatives are described in the conditions of approval.

CRITERIA AND FINDINGS FOR SITE PLAN REVIEW

Analysis of the development based on relevant criteria in SRC 163.070(b) is as follows:

Criteria: The transportation system provides for the safe, orderly, and efficient circulation of traffic into and out of the proposed development, and negative impacts to the transportation system are mitigated adequately.

Finding: The TIA specifies that a right-turn lane is warranted from eastbound Kuebler to southbound Battle Creek.

Criteria: Parking areas and driveways are designed to facilitate safe and efficient movement of vehicles, bicycles, and pedestrians.

Finding: The driveway access onto Boone meets minimum spacing requirements in the PWDS to provide for safe turning movements into and out of the property.

Criteria: The proposed development will be adequately served with City water, sewer, storm drainage, and other utilities appropriate to the nature of the development.

Finding: The Public Works Department has reviewed the applicant's preliminary utility plan for this site. The sewer and storm infrastructure are available within surrounding streets and appear to be adequate to serve the proposed development. Required water improvements are described in the conditions of approval.

ADDITIONAL CRITERIA AND FINDINGS FOR CPC/ZC CONDITIONS

UGA Phase 1 Requirements: Zone Change 09-3 established infrastructure requirements for the subject property consistent with those required for CPC/ZC 06-6 on the neighboring parcel. The following conditions of approval from CPC/ZC 06-6 and ZC 09-3 are being completed with UGA Phase 1:

Condition 1: Battle Creek Road SE/Boone Road SE Intersection and Signal. The westbound left-turn lane and right-turn lane on Boone and the southbound left-turn lane on Battle Creek.

Condition 2: Battle Creek Road SE/Kuebler Boulevard SE Intersection. All improvements.

Condition 8: Location of Boone Road SE driveway. The driveway is appropriately located a safe distance from Battle Creek Road SE to accommodate storage for turning movements while being offset from Cultus Avenue SE enough to reduce impacts to the adjacent neighborhood.

Condition 16: Improvements Required Prior to Certificate of Occupancy. As stated above, the improvements described above shall be completed prior to issuance of a certificate of occupancy for any building in UGA Phase 1. The remaining requirements from CPC/ZC 09-03 may be deferred per SRC 113.205(b)(11)(A).

UGA Phase 2 and UGA Future Phase: SRC 113.205(b)(11)(A) authorizes the Planning Administrator to allow deferral of all or a portion of required public improvements until a stated time or until required by Council, whichever is earlier. Consistent with the applicant's TIA, the findings below describe the CPC/ZC conditions that will be completed as a condition of development in UGA Phase 2 or UGA Future Phase as specified within a deferral agreement to be completed between the developer and the City:

Condition 1: Battle Creek Road SE/Boone Road SE Intersection and Signal. The eastbound left-turn lane on Boone Road SE and the traffic signal.

Condition 3: Kuebler Boulevard SE Improvements from Interstate 5 to 1500 feet west of Battle Creek Road SE. All improvements.

Condition 4: Kuebler Boulevard SE/27th Avenue SE Intersection. All improvements.

Condition 5: Left-turn lanes and pedestrian islands. All improvements.

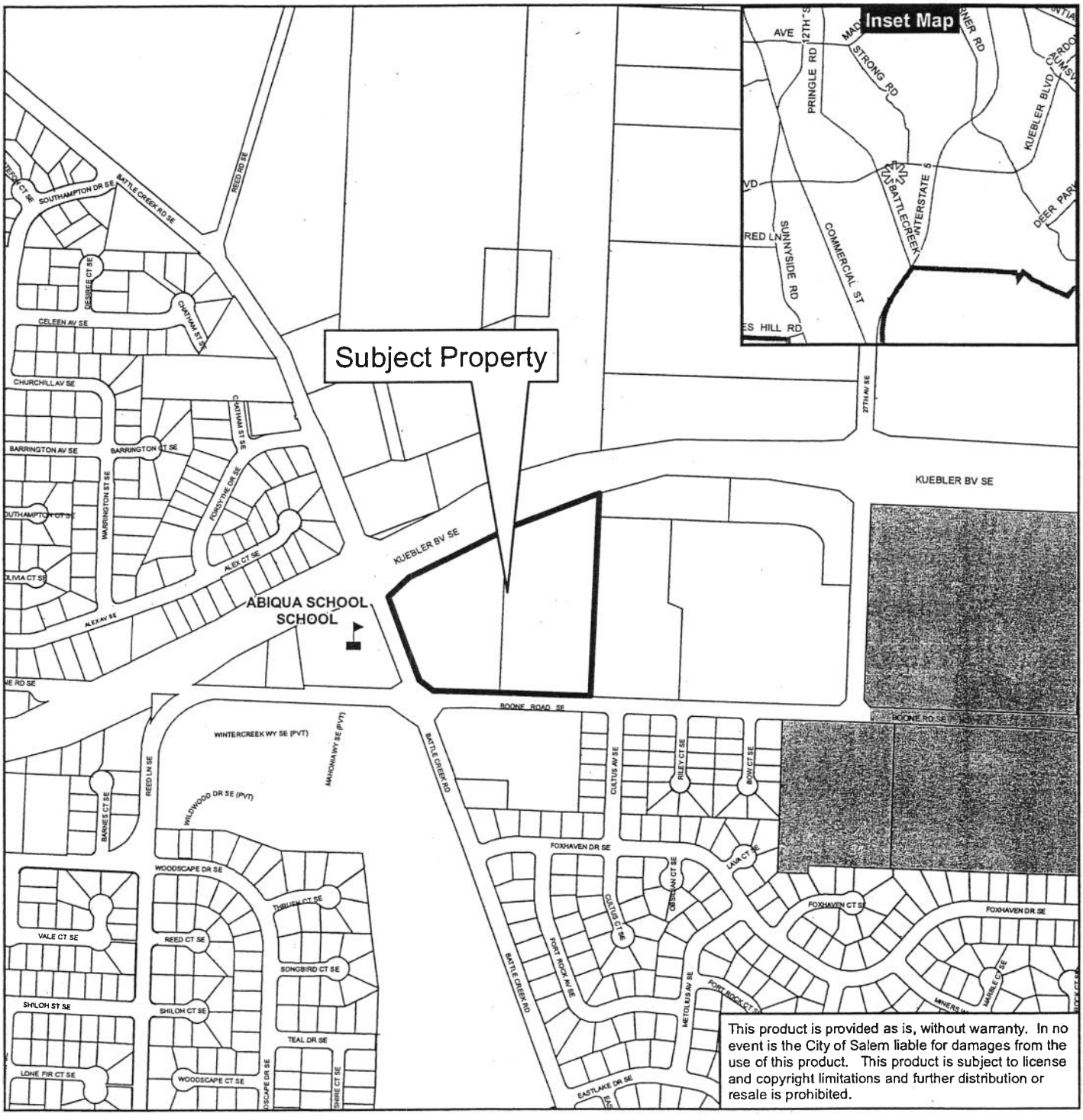
Condition 6: Traffic calming devices. Construction shall be completed or performance security shall be provided as a condition of building permit issuance.

Condition 7: Right-in access on Kuebler Boulevard SE and improvements west to Commercial Street SE. All improvements.

Condition 16: Improvements Required Prior to Certificate of Occupancy. As stated above, improvements are deferred as authorized in SRC 113.205(b)(11)(A) as described in the findings above.

Prepared by: Robin Bunse, Administrative Analyst II

Vicinity Map
East side of Battle Creek Road SE between Kuebler Blvd SE and Boone Road SE



Legend

- Outside Salem City Limits
- Urban Growth Boundary
- Taxlots
- Historic District
- Schools
- Parks

0 100 200 400 Feet

ATTACHMENT 6

G:\CD\PLANNING\LisaAnderson\current planning\Zone Change\PacTrust-ZC.mxd - 7/27/2009 @ 11:31:01 AM

CONCEPTUAL SITE PLAN WITH PROPOSED ZONING SHOWN

PROJECT #SAL-000	MATTHEW H. OYEN, P.E. 15350 SW SEQUOIA PKWY #300 PORTLAND, OR 97224 PH (503) 624-6300 FX (503) 624-7755 KUEBLER BOULEVARD A PACTRUST PROPERTY	KUEBLER COMMERCIAL SALEM LOTS KUEBLER BOULEVARD SALEM, OREGON	REVISION 1. 2.	DATE: 5/23/09 Proposed Zoning Z-2.0

ATTACHMENT 7

Following are examples, in general, of typical square footage for various uses in today's retail marketplace:

- Grocery- typical free standing store (Safeway, Albertsons, etc.) vary from 25,000 to 96,000 sf. (Note the 45,000 s.f. Albertsons on Commercial St. is closing because it is no longer viable.)
- Whole Foods 55,000
- Trader Joes 15,000
- If they also carry general merchandise, pharmacy and soft goods as well as groceries (WalMart, Target, Fred Meyer, etc.) the range is 90,000 to 200,000 sf.
- Costco 150,000-200,000
- General merchandise- varies in size from 8,000 to 50,000 sf. Examples are Michaels (20,000), Bed Bath and Beyond (30,000), Cost Plus World Imports (18,000), Pier 1 (10,000), Office Max (10,000), Jo-Ann Fabrics (35,000), GI Joes (50,000), Best Buy (30,000) and Ulta Cosmetics (10,000)
- Soft goods- wide range from 5,000 to 100,000 sf. Chicos would be at the smaller end, Kohl's and JC Penney at the larger end. Many different sizes in between.
- Crate & Barrel - 50,000
- Pharmacy- 10,000 to 15,000 sf. Walgreens, Rite Aid, etc.
- Banks - 3,000 to 5,000 sf
- Restaurants- fast/casual, full service - 2,000 to 8,000 sf
- Pet- 10,000 sf to 15,000 sf. PetsMart, Petco
- Shops space- 1,000 to 3,000 sf. Coffee, ice cream, gift shops, card shops and miscellaneous specialty shops

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PORTLAND, OR 97204
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MEMORANDUM

Date:	November 29, 2018	Project #: 22051
To:	Tony Martin, City of Salem	
Cc:	Matt Oyen, Pacific Realty Associates, L.P. (PacTrust) Peter Kahn, AVP, Costco Wholesale Corporation	
From:	Andy Daleiden, PE, Claire Dougherty, and Anthony Yi, PE, Kittelson & Associates, Inc.	
Project:	Kuebler Gateway Shopping Center	
Subject:	Response to Appeal of Decision comments	

This memorandum responds to the Appeal of Decision comments related to the May 2018 Traffic Impact Analysis (TIA) for the Kuebler Gateway Shopping Center. The South Gateway Neighborhood Association comments (dated November 4, 2018) and Law Office of Karl G. Anuta comments (dated November 7, 2018) were provided by the City to the Applicant on November 8, 2018. The remainder of this memorandum summarizes the Appeal of Decision comments in *italics* and provides our response in standard text.

STUDY AREA

SGNA Comment #6: *The TIA's coverage area should have included Battle Creek to the north of Kuebler (Pringle Rd/Reed Rd; Battle Creek south all the way from Kuebler to at least the planned Fabry Road extension from Reed Lane to Battle Creek; and west of Battle Creek Road on Boone Road around the curve to Reed Lane and west on Barnes and Baxter to Commercial Street. Probably even further south on Reed Lane to Mildred Road. All these streets are collectors/arterials and are critical parts of both the street and bike route networks and would be affected by the increased traffic resulting from the project. City staff provide no justification for why these intersections were not included in the TIA coverage area.*

Anuta Comment #8: *The TIA illustrates that 40% of site generated traffic travels to/from intersections to the west (August 9, 2018 TIA Figure 8). Kuebler Boulevard/ Stroh Lane intersection will see an increase of 418 trips in the weekday PM peak hour. City of Salem threshold for study area is an increase in trips of 50 in a peak hour (SEE, Section 6.33). There are likely several intersections along Kuebler Boulevard and Commercial Street that were omitted from the TIA and are required to be analyzed per the clear and objective city standard.*

Anuta Comment #36: *The TIA coverage area needs to be expanded to include collector and arterial street important to auto and bike traffic that will see increased traffic resulting from the proposed*

development. Battle Creek Rd. north of Kuebler Blvd. to Pringle Rd. and Reed Rd; Battle Creek Rd. south from Kuebler Blvd. to at least the planned Fabry Rd. extension from Reed Lane; Boone Rd. west of Battle Creek Rd. including Reed Lane to Fabry Rd.; Barnes Ave. and Baxter Rd. west to Commercial Street. Battle Creek Rd./Kuebler Blvd. intersection was not included in the TIA simulation based queuing analysis; nor was the Battle Creek Rd./Boone Rd. intersection. These should all be evaluated in an updated TIA that should include specific improvements data for each impacted street.

Response: The Staff Decision correctly concludes that the TIA study area is adequate. The study area assumed in the TIA was coordinated with City staff as part of the TIA scoping process and is consistent with the study area analyzed as part of the approved Kuebler PacTrust comprehensive plan amendment and zone change project. The 2006 TIA supporting the 2007 Council Decision established the appropriate analysis area and completely mitigated for all project transportation impacts in that analysis area. It is an inappropriate collateral attack on the Council's 2007 Decision to claim now that the analysis area was too small and should be enlarged now. Further, for all intersections evaluated in the 2006 TIA, none are expected to receive a contribution of 50 or more trips during the analysis peak hour over those anticipated and studied in the 2006 TIA and mitigated in the 2007 Council Decision. Moreover, there is no intersection studied in the 2006 TIA where the proposed shopping center here will create more than 10% of the current traffic volumes on any leg beyond that which was studied in the 2006 TIA and mitigated in the 2007 Council Decision. The analysis area selected for this site review is appropriate and is reasonably calculated to determine whether there are any additional transportation impacts in the affected area requiring additional mitigation due to the particular anchor tenant proposed.

ANALYSIS YEAR

SGNA Comment #7: *Salem requires horizon year analysis periods of year of opening for development "allowed under existing zoning" and "year of opening each phase" for "multi-phased development" (Salem Administrative Rules 6.33). The TIA indicates that the year of opening for the proposed development is 2019. For such a large project, it would seem difficult to attain a year of opening in 2019. Additionally, this project is proposed to be constructed as a multi-phased development although no schedule has been provided in the TIA. The May 31, 2018 TIA states that "[t]he proposed Costco will include a warehouse and fuel station with four islands and the potential to add a fifth island in the future (30 fueling positions)." Due to the lack of detail in the trip generation estimates, it's unclear whether the trip generation presented includes four islands or five islands nor how many islands fueling positions are even proposed at this time versus the future. Additionally, the site plan illustrates a certain amount of retail as a "future phase." Again, there are no specifics about what will be constructed by 2019 versus some other time unknown time period. No timeline is provided in the development application, TIA and Decision justifying that the project will be completed in 2019 justifying that the 2019 horizon year.*

Anuta Comment #13: *Salem requires horizon year analysis periods of year of opening for development "allowed under existing zoning" and "year of opening each phase" for "multi-phased development" (Salem Administrative Rules 6.33). The TIA indicates that the year of opening for the*

proposed development is 2019. For such a large project, it would seem highly unlikely to actually attain a year of opening in 2019.

Anuta Comment #14: *Additionally, this project is proposed to be constructed as a multi-phased development although no schedule has been provided in the TIA. The May 31, 2018 TIA states that "[t]he proposed Costco will include a warehouse and fuel station with four islands and the potential to add a fifth island in the future (30 fueling positions)." Due to the lack of detail in the trip generation estimates, it's unclear whether the trip generation presented includes four islands or five islands nor how many islands fueling positions are even proposed at this time versus the future. Additionally, the site plan illustrates a certain amount of retail as a "future phase." Again, there are no specifics about what will be constructed by 2019 versus some other time unknown time period, so the proper horizon year cannot be determined from the TIA.*

Response: The horizon year analysis period meets the requirements set under Section 6.33 of the City Public Works Design Standards as the proposed shopping center development is allowed under existing zoning. It is not a multi-phased development and was coordinated with City staff as part of the TIA scoping process. The proposed shopping center is scheduled to open in year 2019 and will include all major buildings such as Costco, the fuel station, and shops building. While some retail pads may or may not be leased in 2019, it does not delay the date of opening for the shopping center.

Anuta Comment #35: *Since Kuebler Boulevard is under ODOT jurisdiction up to to 27th street, ODOT Development Review Guidelines of a 15 year horizon should be evaluated, ie, from 2020 to 2035, or further out, depending on when a credible start date can be established.*

Response: The scope of the TIA, including analysis years, meets City standards and ODOT guidelines. The TIA and supplemental documents have been reviewed and approved by traffic professionals at both ODOT and the City of Salem as recorded in the Decision, which included the agreed upon analysis years.

STUDY TIME PERIODS

Anuta Comment #9: *The TIA fails to analyze the weekday AM peak hour, The City requires analysis of AM period (Rule 6.33). Costco gas stations are typically open in AM peak hour.*

Anuta Comment #10: *According to ITE Trip Generation Manual, 30 fueling positions would generate 308 trips in the weekday AM peak hour likely distributing at least 50 trips through several intersections. Costco gas stations appear to generate far more traffic than typical gas stations. The 21,000 square feet of retail will likely be open during the weekday AM peak hours. There is also likely Costco activity during this time period.*

Response: Per the City of Salem Administrative Rules Section 6.33 (f) Peak Traffic Hours, "the City Traffic Engineer will determine which peak hours are required for traffic study." The study periods analyzed in

the TIA were coordinated with City staff and determined by the City Engineer as part of the TIA scoping process. Furthermore, the weekday PM peak hour and Saturday midday peak hour represent the time periods when traffic levels are at their highest and therefore represent reasonable study time periods.

Anuta Comment #12: *Weekday PM peak counts are required to be taken between 3 PM and 6 PM (Rule 6.33), but they appear to have been only taken between 4 PM and 6 PM (May 31, 2018 TIA, Appendix A).*

Anuta Comment #24: *Additionally, as described before, the need for a weekday AM peak hour analysis was ignored. The southbound left turn at the I-5 SB/Kuebler Boulevard intersection was observed to have a saturation flow rate of 1224 vehicles per hour per lane, but was not adjusted to 1800 vehicles per hour per lane.*

Response: Per the City of Salem Administrative Rules Section 6.33 (f) Peak Traffic Hours, "the City Traffic Engineer will determine which peak hours are required for traffic study." The study periods analyzed in the TIA were coordinated with City staff and determined by the City Engineer as part of the TIA scoping process. As reported in the May 20187 TIA, the count data showed the PM peak hour period was from 4:35 to 5:35 PM. As the peak period was found to occur well after 4:00 PM, there was no need to obtain count data prior to 4:00 PM.

Additionally, per the ODOT Analysis Procedures Manuel (page 3-37), a saturation flow rate of 1900 may be used inside the Salem MPO. Additional details are provided on page 4 of the August 9, 2018 Response to City and ODOT Review Comments memorandum.

TRAFFIC COUNTS

SGNA Comment #4: *Kittleson recently collected June traffic counts to validate the December count for one intersection (I-5 southbound at Kuebler Blvd.) to fulfill the ODOT recommended seasonal adjustment pointed out in review comments. Nine of the ten intersections in the TIA, including the intersection of Battle Creek Rd and Kuebler Blvd at mobility target (v/c=0.90) with the assumed higher saturation rate (1900), still have not been reassessed using the ODOT recommended seasonable adjustment. City staff provide no justification for the why the applicant was not required to provide seasonally adjusted traffic counts for these intersections.*

Response*:* Per coordination with the City and ODOT, the application of a seasonal adjustment was only requested for and only applies to State facilities and not City intersections. Instead of a seasonal adjustment, the city code specifies the particular days when traffic counts may be taken, making seasonal adjustment unnecessary. Specifically, Section 6.33 of the City Public Works Design Standards, "traffic counts shall be collected on a Tuesday, Wednesday, or Thursday that is not a city, state or federal holiday, when K-12 school in is session." The traffic counts used in the TIA meet these City standards and were coordinated with City staff including the City Engineer as part of the

TIA scoping process. Additional details are also provided on page 6 of the August 9, 2018 Response to City and ODOT Review Comments memorandum.

SEASONAL ADJUSTMENT

Anuta Comment #34: *All ten involved intersections should be evaluated for seasonal adjustments and reassessed in the TIA. Only I-5 southbound at Kuebler Blvd. was evaluated in June to validate the December count.*

Response*:* Per coordination with the City and ODOT, the application of a seasonal adjustment was only requested for and only applies to State facilities and not City intersections. As noted, the City's code contains explicit requirements for the days when counts may be taken, rather than authorizing "seasonal adjustments". Accordingly, per Section 6.33 of the City Public Works Design Standards, "traffic counts shall be collected on a Tuesday, Wednesday, or Thursday that is not a city, state or federal holiday, when K-12 school in is session." The traffic counts used in the TIA meet these City standards and were coordinated with City staff including the City Engineer as part of the TIA scoping process. Also, the City requirements align with other standard practices for areas within a metropolitan area. Furthermore, ODOT often requires traffic volumes to be seasonally adjusted on highway facilities such Hwy 101 (Oregon Coast) and US 26 (Mount Hood Hwy) since these types of facilities are outside a metropolitan area and experience heavy fluctuations in traffic due to seasonal activities. Additional details are also provided on page 6 of the August 9, 2018 Response to City and ODOT Review Comments memorandum. These additional details confirm the City's approach and shows that a seasonal adjustment factor is not appropriate.

RIGHT-TURN-ON-RED ADJUSTMENT

SGNA Comment #8: *The TIA assumes that 42% of southbound right turns at the I-5 Southbound/Kuebler Boulevard intersection are made on red signal indication (May 31, 2018 TIA, pg. 4). This assumption is not based on any submitted evidence and varies from the default right turn on red assumptions according to industry standard. Applicant stated that counts and video observations led to the 42% right-turn-on-red, but failed to provide any supporting data.*

Anuta Comment #6: *The TIA assumes that 42% of southbound right turns at the I-5 Southbound/Kuebler Boulevard intersection are made on red signal indication (May 31, 2018 TIA, pg. 4). This assumption is not based on any submitted evidence and varies from the default right turn on red assumptions according to industry standard.*

Response: These objections are mistaken. The right-turn-on-red (RTOR) adjustment used in the traffic analysis is based on the traffic count data and video observations taken in December 2017 at the I-5 Southbound Ramp/Kuebler Boulevard intersection. Details are provided in the May 2018 TIA on page 4 and the traffic count data is provided in Appendix A of the TIA.

SATURATION FLOW RATE

SGNA Comment #9: *The TIA relies on an ideal saturated flow rate of 1,900 vehicles per hour of green per lane for all intersections and lanes. The City requires that "ideal Saturday flow rates greater than 1,800 vehicles per hour should not be used unless a separate flow rate analysis has been completed." A separate analysis was completed for a very limited number of intersections and movements. Some of the most congested movements were analyzed and determined that the use of 1,900 vehicles per hour per lane was appropriate for most of the movements that were studies. In all, the study evaluated two intersections and a total of three intersection approaches in the weekday PM peak hour only. The TIA currently analyzes the impacts at nine intersections and 31 different approached in two different time periods. While 1,900 vehicles per hour per lane may be appropriate at the most congested approaches, there is no evidence that supports the use of an ideal saturations flow rate at the remaining 28 intersection approaches. Considering the impacts of both the weekday PM and Saturday peak hours, a total of 59 approaches were not studied. Additionally, as described before, the need for a weekday AM peak hour analysis was ignored. The southbound left turn at the I-5 SB/Kuebler Boulevard intersection was observed to have a saturation flow rate of 1224 vehicles per hour per lane, but was not adjusted to 1800 vehicles per hour per lane. The City decision provides no justification for why the applicant was allowed to apply a limited flow rate analyses to the remaining intersections.*

Anuta Comment #23: *The TIA relies on an ideal saturated flow rate of 1,900 vehicles per hour of green per lane for all intersections and lanes. The City requires that "ideal Saturday flow rates greater than 1,800 vehicles per hour should not be used unless a separate flow rate analysis has been completed." A separate analysis was completed for a very limited number of intersections and movements. Some of the most congested movements were analyzed and determined that the use of 1,900 vehicles per hour per lane was appropriate for most of the movements that were studies. In all, the study evaluated two intersections and a total of three intersection approaches in the weekday PM peak hour only. The TIA currently analyzes the impacts at nine intersections and 31 different approached in two different time periods. While 1,900 vehicles per hour per lane may be appropriate at the most congested approaches, there is no evidence that supports the use of an ideal saturations flow rate at the remaining 28 intersection approaches. Considering the impacts of both the weekday PM and Saturday peak hours, a total of 59 approaches were not studied.*

Response: Per the requirements of the city's code "*a separate flow rate analysis has been completed"* and makes clear that the use of a 1900 vehicle per hour saturation flow rate is appropriate. The saturation flow rate study was performed at several key locations that meet the City of Salem requirements per Division 006 – Street Design Standards and guidelines of the 2010 Highway Capacity Manual (Chapter 31) and the ODOT Analysis Procedures Manuel (APM) (page 3-38). Per the HCM and ODOT APM, a vehicle queue of at least 8 vehicles is needed to measure saturation flow rates. The specific locations used in this study meet this condition and were discussed and confirmed with City staff including the City Engineer, as an acceptable representation of saturation flow rates within the study. Furthermore, the ODOT Analysis Procedures Manuel (page 3-37) supports the use of a saturation flow rate of 1900 inside the Salem MPO. Additional details are

provided on page 4 of the August 9, 2018 Response to City and ODOT Review Comments memorandum.

BACKGROUND GROWTH AND IN-PROCESS DEVELOPMENTS

Anuta Comment #11: *The TIA may fail to base background growth and trip distribution on Mid-Willamette Valley Council of Governments (MWVCOG) travel demand model as required (Salem Administrative Rules 6.33). The TIA relies on 1% growth citing this "is a similar approach to other traffic studies completed in the area" (May 31, 2018 TIA, pg 12). Additionally, the trip distribution "was based on historical Salem Costco sales data and examination of site access, parking layout and site circulation". There is no mentioned that trips were distributed based upon the travel demand model as required. There is also no information provided about how the trip distribution figures were determined, nor to our knowledge was the "historical Salem Costco sales data" presented for review.*

Response: As coordinated with City staff, the 1% growth rate was deemed reasonable because in addition to the 1% annual growth rate, the background growth also included in-process development traffic and is for a 1-year build-out scenario, not a long-term traffic analysis. The TIA required here evaluates only whether in year of the shopping center's opening (2019) the "negative impacts" from the shopping center have been adequately mitigated. In turn, the code requires "mitigation" to be adequate to "restore the operations to a level of service not exceeding pre-development conditions." The TIA establishes the required mitigation will be provided on the day of opening in year 2019.

Regarding the trip distribution, the city code requires that trip distribution be based upon the Mid-Willamette Valley Council of Government Transportation Model *or if model data is not available, then trip distribution "shall be determined by the City Traffic Engineer*." Model data for Costco is not available in the Mid-Willamette Valley COG model. Therefore, the City Traffic Engineer determined trip distribution be based upon Costco specific data. In turn, as required by the City Traffic Engineer, the site review TIA used existing proprietary Salem Costco sales data from FY 2014 through FY 2016 for every zip code in Oregon was analyzed to determine the percent of sales value to each zip code. Estimated directional routing to each zip code was then determined, to approximate percentage of travel each direction to/from the proposed new Costco site. The trip distribution determined from the Costco sales data and as used in the TIA is similar to previous TIAs in the area.

SGNA Comment #5: *The TIA does not include traffic resulting from all potential development affecting the project area, including:*

- *CPC-ZC-UGA18-02 (Kuebler Cascade View)*
- *CPC-ZC16-01 (Kuebler Station)*
- *Strong Rd at 27th St Subdivision*
- *Amazon Distribution Facility (opening in 2019)*

These projects, individually and cumulatively, will have significant impact on area traffic volumes and should be included in the TIA since they weren't addressed in the property zone change in 2006.

The City staff state that only "proposed development that has been permitted and is reasonably expected to be operational at the time the proposed development opens" were required for the application but fails to address why the Amazon Distribution Facility was not included even though it is expected to open in 2019. It is also our contention that staff should have required all proposed development, not just those expected to open in 2019, due to the cumulative impact of the proposed development in the area.

Anuta Comment #20: *The TIA suffers badly from omitting the additional traffic likely to be generated from other developments in this works nearby. These include Kuebler Cascade View, Kuebler Station, Strong Rd. at 27th Street subdivision and the Amazon Distribution Facility. When the TIA is redone, these impacts should be included.*

Response: Staff correctly concluded that the TIA scope is appropriate. In addition to the reasons cited by staff in the Decision, the following additional reasons are offered. First, the city code includes no "cumulative impacts" analysis requirement and it is unclear what such an analysis would entail that is not captured by the legal requirements that apply to this Decision. Second, the referenced Amazon facility would not be included in this or any project transportation analysis, in any event, because its transportation impacts have been fully anticipated and mitigated through the Mill Creek Industrial Area Master Plan (Plan), which was adopted in 2005, nearly two years before the City Council approved the subject property for a shopping center in December 2007. Any impacts associated with the Plan were considered and mitigated as the City deemed appropriate in its 2007 decision approving the property for a shopping center. The Amazon facility will have no independent unmitigated transportation impacts. In fact, the Amazon facility was not required to provide its own TIA for its site review because it generates fewer than 200 trips beyond those anticipated and mitigated in the Plan. Third, like the Plan, this Application is for site plan review for a shopping center that was fully analyzed including that the traffic impacts associated with a 290,000 commercial shopping and service center, were fully evaluated, identified, and mitigated in the TIA that supported the City's 2007 City Council Plan and Zone Change approval decision Order No. 2007-16-CPC/ZC) (2007 Council Decision). The 2006 TIA supporting the 2007 Council Decision established the appropriate analysis area and established the assumed traffic impacts for the approved shopping center. There are no developments that will create traffic impacts (including "in process" developments) in the analysis area that have not been fully considered in either the 2006 TIA supporting the 2007 Decision or in the TIA supporting this site review. The in-process developments used in the TIA were identified by City staff as part of the TIA scoping process. All in-process developments are consistent with their Plan and zone designation that was factored into the traffic analyses supporting the 2007 Council Decision. Thus, the 2006 TIA which supports the 2007 Council Decision anticipated all in-process developments. Hence, the site plan review TIA includes all in-process developments approved by the City at the time of preparing the traffic study, regardless of the fact that the uses were necessarily considered in the 2006 TIA and there is nothing new that undermines the 2006 TIA conclusions that the transportation system will function adequately through year 2025. This TIA review specifically focuses on the fact that any adverse traffic impacts

from the specific shopping center to be developed will be completely mitigated in the year of opening. Furthermore, PacTrust has performed substantial street system improvements which have provided substantially more than its share of traffic capacity and other improvements for those and other future projects. Finally, for any of the listed projects that have not yet been developed, *e.g.* CPC-ZC 16-01 (Kuebler Station), an updated TIA will be required of them at the time of their SPR.

TRIP GENERATION

SGNA Comment #1: *The TIA provides little evidence regarding the derivation of the trip generation figures. City of Salem Administrative Rules Section 6.33 requires trip generation to be based on the Institute of Transportation Engineers Trip Generation Manual. The TIA refers to an abundance of information from other Costco locations but provides none of that data that supports the use of an alternative trip generation or pass-by rate (May 31, 2018 TIA, pg. 19; August 9, 2018 TIA, pg. 2). City standards don't allow for a derivation from the ITE Trip Generation Manual and states that "[for land uses not listed in the ITE Trip Generation Manual, studies for similar development in similar regions may be used upon approval by the City Traffic Engineer." Certainly, the Trip Generation Manual provides data for the proposed uses.*

Anuta Comment #7: *The TIA provides little evidence regarding the derivation of the trip generation figures. City of Salem Administrative Rules Section 6.33 requires trip generation to be based on the Institute of Transportation Engineers Trip Generation Manual. The TIA refers to an abundance of information from other Costco locations but provides none of that data that supports the use of an alternative trip generation or pass-by rate (May 31, 2018 TIA, pg. 19; August 9, 2018 TIA, pg. 2). City standards don't allow for a derivation from the ITE Trip Generation Manual and states that "[for land uses not listed in the ITE Trip Generation Manual, studies for similar development in similar regions may be used upon approval by the City Traffic Engineer." We have seen no such approval and the ITE Trip Generation Manual provides data for the proposed uses, so no such approval should be authorized.*

Response: The trip generation determination in the site review TIA meets City standards outlined in Section 6.33 (h) Site Generated Traffic and is based on data and guidance from the most current version of the ITE Trip Generation Manual. The City of Salem Traffic Engineer and Oregon Department of Transportation (ODOT) have both reviewed and accepted the trip generation estimates associated with the proposed development, which includes the following:

- **Retail pads** – The trip generation estimate is based on the land use code 820 (shopping center) from the Institute of Transportation Engineers (ITE) Trip Generation Manual. This information is described on page 19 of the May 31, 2018 TIA.

- **Costco warehouse and fuel station** – The trip generation estimate is based on trip generation data collected from existing Costco warehouses and fuel stations. This description is provided on pages 2 and 3 of the August 9, 2018 Kittelson response to City and ODOT comments.

Per ITE's Trip Generation Manual, it is always best to use local and specific use trip generation data, if available rather than the general uses included in the ITE Trip Generation Manual. Additionally, Costco

has unique trip characteristics, which do not align with the land use codes from the ITE Trip Generation Manual, in particular, ITE Land Uses (Discount Supermarket, Discount Club), which do not specify whether a fuel station is included in the data set and has limited data for pass-by and diverted trips. Therefore, the TIA and subsequent Kittelson response to City and ODOT comments demonstrate that the trip generation estimate for the proposed development is based on best practices from ITE. This approach was accepted by the City of Salem and ODOT.

Kittelson has collected, analyzed, and refined transportation data for Costco related to trip generation, trip type (primary, pass-by, diverted, internal trips), parking demand, gasoline service rates, car wash service rates, and vehicle queuing. The database contains large data sample sizes and includes very recent information as it is continually updated and refined as new data is collected. The transportation information within the database has been approved in numerous jurisdictions in the U.S., Canada, and Mexico and has been validated by jurisdiction staff in several cases through independent peer study during the development review process. The Costco transportation database is the best source of information to use in developing trip generation estimates for Costco developments since it provides use-specific data that most accurately represents the anticipated traffic characteristics of the unique development type.

SGNA Comment #2: *The TIA estimates 7,210 new daily trips. A review of five other traffic impact analyses for Costcos in Oregon, Washington, and California (see attached) found that this is less than all but one of the traffic impact analyses. The Central Point, Oregon Costco TIA estimated 10,670 new daily trips even though it services a smaller population area than the proposed Kuebler Gateway Shopping Center Costco.*

Response: The SGNA comment is mistaken and reflects an understandable lack of comprehension of transportation engineering. The trip generation calculus including daily trip generation calculations for all Costco stores is similar. The numerical differences in total trip generation is principally the result of whether and to what extent trip reduction principles are applied. Each of the five stores referenced had different trip reduction factors applied for different site-- and area-specific reasons.

The difference between the gross number of trips and the net number of trips will vary based upon the volume of traffic on the adjacent transportation system, on whether a Costco is a part of a retail shopping center as here, or whether it is a standalone store, and so forth. The science of traffic analysis considers traffic behavior such as whether in a given trip a person who goes to the doctor anyway, then stops at Costco. That trip to Costco is not a new trip, rather it is a linked by trip that happened anyway because of the proximity of the Costco to, say, the Salem Clinic. Similarly, Costco stores on high volume transportation corridors, as here, will have a number of members who go to the Costco while passing by on their way to and from some other event using the adjacent street system. These are “pass by trips” and it is an accepted engineering practice to reduce total trips by these “pass by” trips that are on the system anyway but happened to stop at a Costco on the way to

something else. This is because they are not new trips or trips that Costco generates. Accordingly, the estimated daily trip generation for all five Costco stores referenced in the SGNA comment are based upon consistent principles that were applied to the proposed Salem Costco. The following explains this for the stores SNGA mentions and confirms that the daily net new trip generation estimate for the proposed Salem Costco is consistent when co-equal factors are applied.

First, it is important to understand that for most Costco establishments, and indeed any commercial establishment located on an arterial street, that it is standard transportation engineering practice to apply a 30-35% reduction on total new trips to account for pass by trips which are not new to the site but that are on the road anyway. Consistently, here, we applied a 34% pass by trip reduction to account for the fact that thousands of people travel on Kuebler Boulevard each day and that about 34% of the people who will go to this Costco will be travelling on Kuebler Boulevard anyway and will simply stop at the Costco on their way to or from other activities. Second, it is important to understand- the daily total trips and the trip reductions that were applied for each site SGNA mentions to arrive at net new trips. Table 1 summarizes the daily trip rate and total trips reported for each of these Costco sites and the proposed Salem Costco.

Table 1. Total Daily Estimated Trip Generation Comparison

Site Location	Size	Daily Trip Rate	Total Daily Trips
Salem (Proposed), OR	**160,000**	**75.86**	**12,138**
Elk Grove, CA	150,548	72.92	10,978
Central Point, OR	160,000	75.88	12,140
E Vancouver, WA	154,700	75.86	11,736
Ukiah, CA	148,000	75.70	11,204
San Marcos, CA	148,200	80.00	11,856

As shown in Table 1, the total daily trip generation rate used in the Salem Costco TIA is 75.86, which is consistent with the other daily trip generation rates (ranged between 72.92 and 80.00) for the Elk Grove, Central Point, E Vancouver, Ukiah, and San Marcos sites reported in the SGNA comments. Based on this assessment, the daily trip generation estimate for the proposed Salem Costco is consistent with TIA practices for other Costco projects.

The net new trip generation estimates for the Costco sites reported by SGNA were based upon site and area specific factors, and different pass by assumptions due to site specific issues which need to be understood to be able to compare these different sites. Below is a description for each:

- **Elk Grove, CA site** – For this store, the city staff required a gross trip analysis that did not account for any pass by trips. Accordingly, the trip generation estimate reported on page 18 of the *The Ridge and Costco Transportation Impact Analysis* explicitly states that pass-by trips were totally excluded from the analysis as the purpose is to assess the effect of site development on the access points, regardless of whether particular trips might otherwise be considered “pass by”. If pass-by trips (estimated as 3,923 trips) were broken out in the

analysis, as is appropriate here, the net new trips would have been reported as 7,055 net new trips, which is comparable to the reported net new trips of 7,210 for the proposed Salem Costco.

- **Central Point, OR site** – The trip generation estimate for the Central Point Costco Development applied a lower pass-by trip percentage reflecting that store's particular location, which resulted in a lower net new trips presented in the *Central Point Costco Development Transportation Impact Analysis*. As stated in that TIA, due to the relatively low volumes currently on the adjacent streets to the site, pass-by trips were constrained to no more than 15% of the adjacent street volume thus resulting in pass-by rates of only 7-15% presented in Table 7 of this TIA. The total daily trips were estimated at 12,140 trips and if the typical pass-by trip rate percentage of 30-35% was applied, the net new daily trips would have been reported as 8,498 to 7,891 trips. This number is slightly higher than the proposed Salem Costco development net new trips of 7,210 due to the Central Point site not including a reduction for internal trips, since it is a standalone warehouse and fuel station.
- **E Vancouver, WA site** – The trip generation estimate for the E Vancouver Costco included a combination of internal, pass-by, and diverted trip types. Diverted trips are trips that are currently on the roadway system, but change path and travel some distance out of direction to access the development. For the E Vancouver Costco site, diverted trips were taken in account due to a Costco specific market study, the location of two other Costco's within convenient driving distance of the new site, and agency modeling requirements. The proposed Salem Costco does not have these characteristics and therefore, diverted trips were assumed to be new trips and represents a conservative analysis. For an apples-to-apples comparison, we need to compare the total trips subtracted by the internal and pass-by trips for both sites. The *East Vancouver Costco Transportation Impact Analysis* reported 11,736 daily trips, 242 internal trips, and 3,678 pass-by trips. Using these numbers to be consistent with the trip generation approach for the proposed Salem Costco, the total net new trips for the E Vancouver Costco are 7,816 trips, which is similar to the net new trips of 7,210 for the proposed Salem Costco.
- **Ukiah, CA site** – The trip generation reported in the *Costco DEIR Traffic & Circulation Report for the City of Ukiah* excluded applying a pass-by trip rate for daily trips, as required by city staff. As a result, the *TIA* reported 11,204 daily trips. If the typical pass-by trip rate percentage of 30-35% was applied to this site, the net new daily trips would have been reported as 7,843 to 7,283 trips. This number is slightly higher than the Salem Costco development net new trips of 7,210 due to the fact that the Ukiah site also did not include a reduction for internal trips. The Salem Costco includes a reduction for internal trips reflecting that fact that a certain number of people who visit Costco will be on site anyway attending a doctor appointment or visiting another retail establishment.

- **San Marcos, CA site** - The trip generation estimate for the San Marcos Costco included pass-by trips and applied a lower pass-by percentage of 22% based on the requirements of the local jurisdiction. The Costco Wholesale Specific Plan Traffic Impact Analysis Report reported 11,856 daily trips. If the typical pass-by trip rate percentage of 30-35% was applied to this site, the net new daily trips would have been reported as 8,299 to 7,706 trips. This number is slightly higher than the Salem Costco development net new trips of 7,210 due to not including a reduction for internal trips.

- For Costco projects that have been approved by other jurisdictions (local and state transportation departments), we have applied pass-by rates of 34% up to 47% based on average and site-specific Costco pass-by rate trip generation data. Recent approved projects include in Westlake Village, CA; Meridian, ID; Missoula, MT; West Valley City, UT; Spokane, WA.

As noted above, the daily trip generation estimate for the proposed Salem Costco is consistent with TIA practices for other Costco projects.

PASS-BY RATE

SGNA Comment #3: *The TIA assumed a 34% pass-by trips based on a general retail category in the Institute of Transportation Engineers Trip Generation Manual. The discounted supermarket category pass-by trips category, which aligns closer to a Costco Wholesale, is 21%. The project TIA should be recalculated using the discounted supermarket pass-by assumption. The applicant says that the 34% pass-by rate is based on their Costco traffic database but fails to provide specific data for review or provide data from the current Salem Costco that supports a 34% rate*

Anuta Comment #33: *Pass-by trips were calculated at 34% pass-by trips in the TIA, but a "general retail" benchmark was used, rather than the "discount grocery" estimation, which is 21%. The assessment should be redone using this assumption, since it is closer to the Costco business model.*

Response: The pass-by trip generation rates used in the study are based on data taken from existing Costco's with gas stations in the United States (includes warehouses with gas stations Oregon). The Costco transportation database is the best source of information to use in developing trip generation estimates for Costco developments since it provides use-specific data that most accurately represents the anticipated traffic characteristics of the unique development type.

Average pass-by trips range between 30% and 35% for existing Costco warehouses, which corresponds with the 34% pass-by rate used for the proposed Salem Costco. Also, 34% pass-by rate is applicable for a shopping center use. Additionally, a Discount Supermarket land use category from ITE Trip Generation Manual is not consistent with the unique characteristics (e.g. business model, membership, store hours, type of services—bakery, pharmacy, optical, tire center, gas station) of a Costco. Additionally, the data set for a Discount Supermarket land use category in ITE includes some facilities that may be open 24 hours a day, as well as does not identify whether a fuel station is

present. Therefore, it is not recommended or best practice to use the Discount Supermarket from ITE for estimating trips for a Costco. The next best ITE category, if site specific data were not to be used, would be the "shopping center" category that was used in the 2006 TIA. If this category is used, then 34% pass-by rate is applicable. The trips we calculate are actually higher by using the Costco-specific data. As identified in earlier responses, the TIA and subsequent Kittelson response to City and ODOT comments demonstrate that the trip generation estimate for the proposed development is based on best practices from ITE. This approach was accepted by the City of Salem and ODOT. No further analysis is required.

INTERSECTION OPERATIONS

Anuta Comment #1: *The operation of the study intersections and the ability to meet ODOT and City of Salem mobility standards cannot be verified, due to a number of omissions or errors in the TIA's dated May 31, 2018 and August 9, 2018.*

Anuta Comment #2: *According to the TIA, the Kuebler Boulevard/Battle Creek Road intersection currently operates at a v/c ration of 0.85 and is approaching Salem's v/c ratio standard of 0.90 in the weekday PM peak hour. With the approval of the development, the intersection would operate at a v/c ratio of 0.90 (May 31, 2018 TIA Figure 11).*

Anuta Comment #3: *According to the TIA, the I-5SB/Kuebler Blvd intersection will operate at a v/c ration of 0.85 during the weekday PM peak hour with the approval of the development. The ODOT mobility standard is a v/c ratio of 0.85 (May 31, 2018 TIA Figure 11).*

Response: These comments are mistaken. The TIA does not contain "omissions and errors" and all assumptions can be verified with reference to the TIA itself, its supplements and appendices. Furthermore, the TIA and supplemental documents have been reviewed and approved by traffic professionals at the City of Salem and ODOT as recorded in the Decision. As documented in the TIA, all study intersections, including the Kuebler Boulevard/Battle Creek Road and I-5 Southbound/Kuebler Boulevard intersections are forecast to meet City operating standards under build-out conditions. Furthermore, all traffic analyses have been reviewed and approved by traffic professionals at the City of Salem and ODOT as recorded in the Decision. Finally, and importantly, the 2007 Decision establishes that the entire affected transportation system functions adequately if not better with the proposed shopping center and all of its required transportation system improvements.

SGNA Comment #14: *The intersection of I-5 Southbound/Kuebler Boulevard and Kuebler Blvd/27th Avenue have apparently been analyzed incorrectly. Exhibit 1 of the August 9, 2018 TIA illustrates channelized southbound dual right turn lanes turning into three westbound through lanes on Kuebler Boulevard that extend all the way to the Kuebler Boulevard/27th Avenue intersection. The dual southbound lanes are not channelized behind an island, nor are there three westbound lanes*

on Kuebler Boulevard. Additionally, the channelized right turn lane at the I-5 Southbound/Kuebler Boulevard intersection should have been modeled as a yield control not a free movement. Concern not addressed by applicant of City staff in Decision.

Anuta Comment #31: *The intersection of I-5 Southbound/Kuebler Boulevard and Kuebler Blvd/27th Avenue have apparently been analyzed incorrectly. Exhibit 1 of the August 9, 2018 TIA illustrates channelized southbound dual right turn lanes turning into three westbound through lanes on Kuebler Boulevard that extend all the way to the Kuebler Boulevard/27th Avenue intersection. The dual southbound lanes are not channelized behind an island, nor are there three westbound lanes on Kuebler Boulevard.*

Response: The intersections of I-5 Southbound/Kuebler Boulevard and Kuebler Boulevard/27th Avenue were analyzed correctly and is supported by the fact that the TIA and supplemental documents have been reviewed and approved by traffic professionals at both ODOT and the City of Salem as recorded in the Decision. The dual southbound right turn lanes at the I-5 Southbound/Kuebler Boulevard intersection were modeled as channelized lanes in order to implement the right turn on red (RTOR) movement in SimTraffic. In reviewing initial SimTraffic model runs without any right turn channelization, vehicles were not simulating making a RTOR movement. Therefore, to more closely align with existing intersection operations, the right turn lanes were modified within the model to be channelized, to allow the RTOR movement, matching real world operations.

Furthermore, exhibit 1 of the August 9, 2018 supplemental was used to illustrate estimated queue lengths along Kuebler Boulevard between 27th Avenue and I-5 Southbound Ramp. As shown in Exhibit 1, no queues are shown in the third lane as it is supposed to represent the westbound exclusive right-turn lane at the Kuebler Boulevard/27th Avenue intersection. While the graphic in Exhibit 1 is misleading, the intersections of I-5 Southbound/Kuebler Boulevard and Kuebler Boulevard/27th Avenue were analyzed correctly and reviewed and approved by City and ODOT staff as previously stated.

Lastly, the eastbound and westbound channelized right turn lanes at the I-5 Southbound/Kuebler Boulevard intersection do not yield to any conflicting vehicle movements, therefore modeling as a free movement is reasonable.

SIGNAL TIMING

SGNA Comment #12: *The TIA states that "[a]ll of the intersections with changes included optimized signal timings given the significant changes planned at these intersections" (May 31, 2018 TIA, pg. 13). Apparently, no signal timing changes were made to other intersections. The intersections along Kuebler Boulevard operate in coordination with the other signalized intersections. In order to depict realistic operations, the applicant should be required to analyze those other intersections as well with revised signal timing. The city should review the proposes signal timing to ensure what is proposed*

would be acceptable. The proposed signal timing should be required to be implemented by the applicant.

Anuta Comment #29: *The TIA states that "[a]ll of the intersections with changes included optimized signal timings given the significant changes planned at these intersections" (May 31, 2018 TIA, pg. 13). Apparently, no signal timing changes were made to other intersections. The intersections along Kuebler Boulevard operate in coordination with the other signalized intersections. In order to depict realistic operations, the applicant should be required to analyze those other intersections as well with revised signal timing. The city should review the proposed signal timing to ensure what is proposed would be acceptable. The proposed signal timing should be required to be implemented by the applicant.*

Response: The traffic analysis does consider the re-coordination of offsets of the signals along Kuebler Boulevard. Details are provided in Appendix E and Appendix F of the May 2018 TIA. As the existing signal timing sheets do not reflect the planned lane configuration and signal modifications that will be in place by year 2019, the future phasing and timing operations at these intersections were estimated based on the available timing data, with optimized timings based on the projected traffic volumes and patterns. This is consistent with every other TIA for site review that Kittelson is aware of. Once the planned improvements are implemented, signal optimization and re-coordination may occur as needed to adjust to travel patterns.

QUEUING

SGNA Comment #10: *During the weekday PM peak hour, the westbound through movement queue length at the Kuebler Boulevard/27th Avenue intersection is anticipated to be 500 feet, blocking the westbound left turn lane (August 9, 2018 TIA, pg. 9, Table G) with the approval of the development.*

SGNA Comment #16: *During total traffic 2019-PM condition, the westbound through movement queue length (490ft) is anticipated to cause significant blocking for movement attempting to occupy the storage lane to make a westbound left turn at the intersection of 27th St and Kuebler Blvd.*

Response: As previously stated in the May 2018 TIA and the August 9, 2018 Response to City and ODOT Review Comments memorandum, the queueing analysis performed for this project meets the City of Salem requirements for a TIA (Division 006 – Street Design Standards). Moreover, vehicle trips on the affected transportation systems are consistent with the assumptions in the 2007 Council Decision. With assumed area improvements complete, all of the storage lengths are adequate to accommodate the projected 95th percentile vehicle queues. With respect to the westbound through movement queue length at the Kuebler Boulevard/27th Avenue intersection, these too are expected to be accommodated by the available storage. While it is possible that through movement queues may extend past the striped entrance to the westbound left-turn lane during congested conditions, left-turning traffic will be able to access the left-turn lane via the center median striped area.

SGNA Comment #11: *During the weekday PM peak hour, the northbound right turn movement queue length at the Kuebler Boulevard/27th Avenue intersection is anticipated to be 325 feet, extending into the roundabout at 27th Avenue/Costco site access (August 9, 2018, pg. 9, Table G) with the approval of the development.*

SGNA Comment #15: *During total traffic 2019-PM condition, the northbound right turn movement queue length (306ft) for the intersection of 27th St and Kuebler Blvd exceed the available storage (290ft) when utilizing the ODOT calibration (preferred simulation parameters).*

Anuta Comment #27 *During the weekday PM peak hour, the northbound right turn movement queue length at the Kuebler Boulevard/27th Avenue intersection is anticipated to be 325 feet, extending into the roundabout at 27th Avenue/Costco site access (August 9, 2018, pg. 9, Table G) with the approval of the development.*

Response: Queuing analyses were performed using Synchro and SimTraffic (simulation-based queueing analysis) and the 95th percentile queue lengths for the northbound right-turn movement are projected to be accommodated within the storage length. Details are provided on page 29 of the TIA and page 9 of the August 9, 2018 Response to City and ODOT Review Comments memorandum.

SGNA Comment #13: *Only three intersections were evaluated using a simulation-based queuing analysis. The more critical intersection of question: Battle Creek Rd/Kuebler Blvd, and Battle Creek Rd/ Boone Rd were simply not reported and omitted. This information should have been provided especially when the re-calculated trip generation for the proposed retail pads were projected to be higher than the original estimation using the fitted curve methodology. In order to capture realistic queue lengths and spillover effects in an urban setting such the case in the study area, a microscopic simulation model such as SimTraffic should be utilized to report the queue lengths for closely spaced intersections such are many of the intersections in the study area. Concern not address by applicant or City Staff in Decision.*

Anuta Comment #30: *Much of the queuing analysis was prepared using Synchro, which is a macroscopic model. This methodology is appropriate for isolated intersections that are uncongested. In order to capture realistic queue lengths and spillover effects in an urban setting such as the case in the study area, a microscopic simulation model such as SimTraffic should be utilized to report the queue lengths for closely spaced intersections such as many of the intersections in the study area.*

Response: The queueing analysis presented in the TIA meets the City of Salem requirements for a TIA (Division 006 – Street Design Standards). However, per ODOT's request, a 95th percentile queuing analysis was performed using SimTraffic 10. The analysis focused on the subject intersections related to ODOT jurisdiction, which includes the I-5 Northbound and I-5 Southbound Ramps along Kuebler Boulevard. Additionally, the 27th Street/Kuebler Boulevard intersection (City of Salem) was included in the operational analysis, since this intersection is the closest signalized

intersection to the I-5 Southbound Ramp (approximately 1,225 feet of spacing). Results of the simulation-based queuing analysis indicate that the 95th percentile queue lengths are accommodated for all movements at the three intersections, which is consistent with the findings in the TIA. Additional details are provided on page 7 of the August 9, 2018 Response to City and ODOT Review Comments memorandum.

Anuta Comment #4: *Table 7 of the TIA reports the left turn and right turn queue lengths for each intersection, however the table is missing the queue lengths for the through movements at each intersection. Some of the missing queue lengths exceed capacity such as the westbound and eastbound through movements at the intersection of Kuebler/Battle Creek. The eastbound through movement 95th percentile queue length is 727 feet and the westbound through movement queue length is 947 feet.*

Response: The estimated 95th percentile queues can be accommodated by the available storage lanes at the Kuebler Boulevard/Battle Creek Road intersection for the eastbound and westbound through movements. The available queue storage for the eastbound and westbound through movements along Kuebler Boulevard at Battle Creek are greater than 1,500 feet over two travel lanes in both directions.

Anuta Comment #5: *The TIA reports Intersection #1 (Kuebler/Battle Creek), southbound through movement at the 95th percentile queue length (374 feet). This queue will likely result in blocking the southbound left turn from entering the left turn bay at the signal.*

Response: The standard requires compliance with the 95th percentile queue length. This means accommodating queue lengths within the storage lengths. The situation of a through movement queue limiting access to left or right-turn lanes during congested conditions is not an uncommon condition, is not inconsistent with the 95th percentile requirement and does not violate any City standards and/or approval criteria. While the southbound through movement queue at the Kuebler Boulevard/Battle Creek Road intersection may extend past the striped entrance to the southbound left-turn lane during congested conditions, similar to many other signalized intersections throughout the City and beyond, a left-turning motorist will be able to access the left-turn lane through subsequent signal cycles. As previously stated, the fact that the queueing analysis performed for this project meets the City of Salem requirements for a TIA (Division 006 – Street Design Standards) is demonstrated by the fact that the city's professional staff and ODOT have approved the TIA including the queuing analysis and the fact that the TIA and supplemental documents have been completely reviewed and approved by traffic professionals at the City of Salem and ODOT as recorded in the Decision.

FUEL STATION

SGNA Comment #18: *The TIA provided no analysis of queuing associated with the gas station, The Tigard Costco has had to make modifications to their on-site queue storage due to heavy demand. It is possible that gas station queuing could extend into primary entrance from 27th Avenue. Concern not addressed by applicant or City staff in Decision.*

Anuta Comment #21: *The TIA provided no analysis of queuing associated with the gas station, The Tigard Costco has had to make modifications to their on-site queue storage due to heavy demand. It is possible that gas station queuing could extend into primary entrance from 27th Avenue.*

Response: The comment is inaccurate. As stated previously, Kittelson collected, analyzed, and refined transportation data for Costco related to trip generations, trip type (primary, pass-by, diverted, internal trips), parking demand, gasoline service rates, car wash service rates and vehicle queuing. The proposed Costco fuel station may open with 24 fueling positions and has ample storage capacity for the expected demand and vehicle queues as depicted in Exhibit 1. If all fueling positions are occupied, the fuel station area has an additional queue storage capacity for approximately 43 vehicles, as depicted by the green vehicles in Exhibit 1. Additionally, the proposed Costco fuel station can be expanded to 30 fueling positions if the demand and queues increase in the future to help with queue management.

Exhibit 1. Available Queue Storage at the Salem Costco Fuel Station

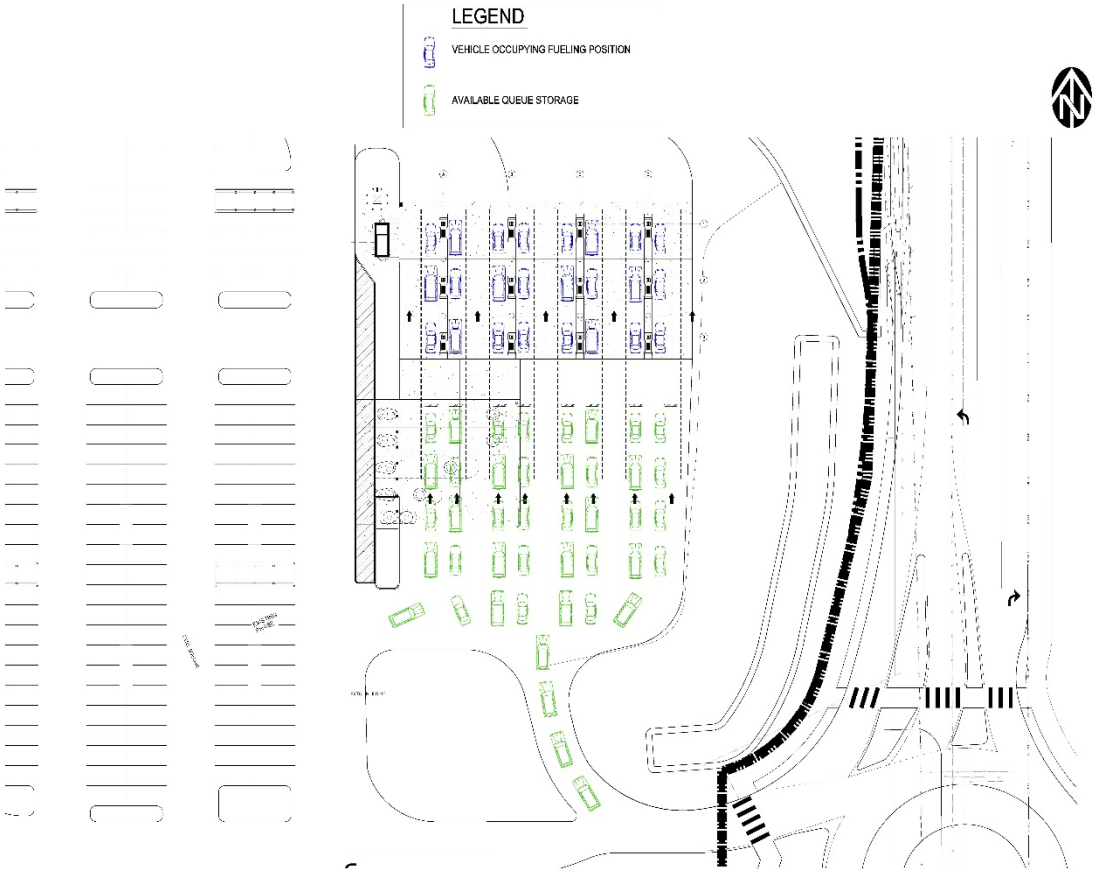


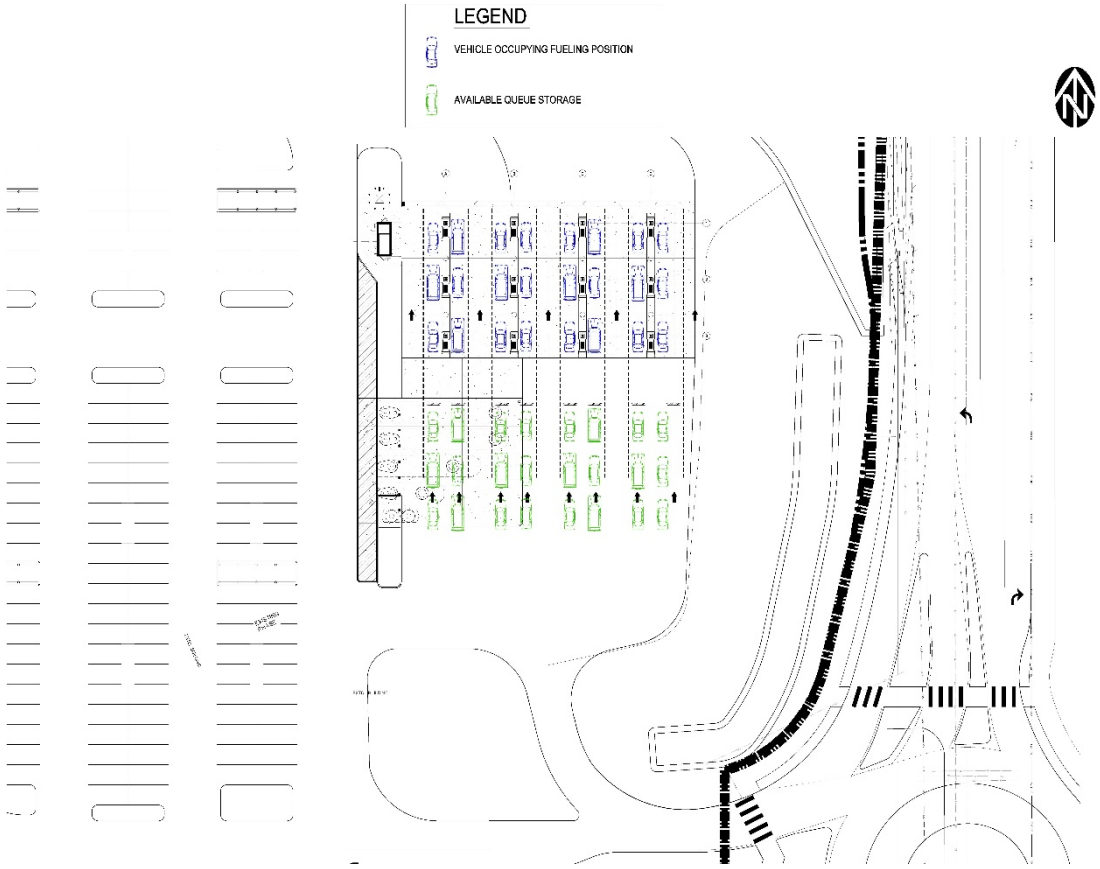
Table 1 summarizes the estimated vehicle queues at the proposed Salem Costco site based on the trip generation data from the existing Salem Costco site and other Costco-specific queue data.

Table 1. Estimated Vehicle Queues at the Proposed Salem Costco Fuel Station

Time Period	Average Queue	Max Queue	95th Percentile Queue
Weekday PM Peak	3 vehicles	10 vehicles	8 vehicles
Saturday Midday Peak	13 vehicles	24 vehicles	21 vehicles
Range	3-13 vehicles	10-24 vehicles	8-21 vehicles

As shown in Exhibit 1, assuming 24 fueling positions the proposed Costco fuel station has queue storage for approximately 43 vehicles. The estimated range for the maximum queue is 10 to 24 vehicles during the two peak time periods, which can easily be accommodated within the fuel station area and not extend into the primary entrance from 27th Avenue. Exhibit 2 illustrates the estimated maximum queue during a Saturday peak at the fuel station.

Exhibit 2. Estimated Saturday Mid-day Peak Maximum Queue at the Salem Costco Fuel Station



In summary, the proposed Costco fuel station has adequate storage to accommodate the estimated maximum vehicle queues assuming 24 or up to 30 fueling positions within the site without impacting the operations at the internal driveway or on 27th Avenue.

Anuta Comment #17: *It is not clear if all five of the fueling positions will be for cars, or if commercial truck fueling is also contemplated. This needs to be clarified in a revised TIA, as it effects the numbers presented in the TIA.*

Response: The fueling positions are designated for passenger vehicles.

KUEBLER BOULEVARD – EXISTING RIGHT-IN ONLY ACCESS

Anuta Comment #15: *Kuebler Boulevard is classified as a Parkway (May 31, 2018 TIA, pg 6, Table 2). Section 804.040 of the SRC states that "[d]riveway approached onto a parkway shall be no less than one mile from the nearest driveway approach or street intersection, measured from centerline to centerline." The access would be just 660 feet east of the Kuebler Boulevard/Battle Creek Road intersection and approximately 1290 feet west of the Kuebler Boulevard/27th Avenue intersection. This criterion cannot be met.*

Anuta Comment #16: *The code further states "[t]he standards set forth in this section cannot be varied or adjusted." A Kuebler access cannot meet the standard. The TIA and site plan need to be updated to reflect no access to Kuebler Boulevard.*

Response: The existing right-in only access driveway from Kuebler Boulevard was a Condition of Approval from *CPC/ZC06-06.*

INTERSECTION CONTROL TREATMENT AT BATTLE CREEK/BOONE ROAD

SGNA Comment #17: *The intersection of Battle Creek Road/Boone Road crash rate is ranked higher than other comparative intersections. This intersection is proposed to be signalized, however further investigation is needed to evaluate other alternative solution to mitigate for this higher than usual crash rate. While a signal might address certain type of crashes, it may increase other types of crashes (May 31, 2018 TIA, pg. 6). Concern not addressed by applicant or City staff in Decision.*

Anuta Comment #22: *The intersection of Battle Creek Road/Boone Road crash rate is ranked higher than other comparative intersections. This intersection is proposed to be signalized, however further investigation is needed to evaluate other alternative solution to mitigate for this higher than usual crash rate. While a signal might address certain type of crashes, it may increase other types of crashes.*

Response: The Battle Creek Road/Boone Road intersection was previously analyzed as part of the approved Kuebler PacTrust comprehensive plan amendment and zone change project. The 2006 TIA

supporting the 2007 Council Decision established the appropriate mitigations for all project transportation impacts in the analysis area. It is an inappropriate collateral attack on the Council's 2007 Decision to now claim that alternate solutions are necessary. A condition of approval from the comp plan/rezone project is to install a traffic signal at this intersection. This intersection will be signalized in 2019 as part of the PacTrust required off-site improvements, which is expected to improve the intersection safety performance.

OFF-SITE IMPROVEMENTS

Anuta Comment #18: *Clarity is needed regarding the various improvements that will be constructed by others or by PacTrust. Are these improvements required to be in place prior to the opening of this development?*

Anuta Comment #19: *Additionally, should this development be required to complete the improvements if others do not complete the improvements prior to occupancy of this development? Have the improvements been designed and are they each financially guaranteed?*

Response: Details of all required off-site transportation improvements are provided on page 11 and 12 of the May 2018 TIA. As stated in the May 2018 TIA, all improvements are scheduled to be complete prior to the opening of the Kuebler Gateway Shopping Center, and will be fully funded by the Applicant. The construction drawings for the required offsite improvements have been submitted to the City Building Department for review

Anuta Comment #25: *As already noted, Kuebler Boulevard is classified as a "parkway." Approximately 1,200 feet of the site's Kuebler Boulevard frontage appears to have been constructed without compliance with the City of Salem's Transportation System Plan which requires a seven foot wide planter strip between the curb and sidewalk. No planter strip has been constructed and the sidewalk has been constructed in the incorrect location. Additionally, a 16 foot wide center landscaped median is required, but has not been constructed along any of the Kuebler Boulevard site frontage.*

Response: The scope of the project that constructed the referenced 1,200 lf of site frontage was part of a far larger project that included the widening of Kuebler Boulevard all the way from Commercial Street to the I-5 Interchange. PacTrust contributed $3,000,000 toward the construction of these improvements. However, they were designed and built by the City of Salem. Due to site constraints along the Kuebler Boulevard right-of-way including boulder piles, steep slopes, and excessive grade changes, the City made adjustments to the design and construction of the frontage road improvements. These adjustments were approved by the City of Salem Public Works Director in accordance with SRC 803.035(l)(2)(B). Not doing so would have resulted in significantly higher construction costs that would not have allowed the full extent of the capacity improvements to be completed.

Anuta Comment #26: *27th Avenue, Boone Road and Battle Creek Road are all classified as "collectors." Most of the site's 27th Avenue frontage that will be constructed is not illustrated to include a planter strip, also not in compliance with the City TSP. Approximately 960 feet of the site's Boone Road frontage has been constructed without a planter strip. The site plan illustrates that the remainder of the approximately 1,600 foot frontage along Boone Rod will also not be constructed in compliance with the City TSP. The approximately 430 foot long Battle Creek Road site frontage has not been constructed with a landscape strip.*

Response: As shown on the PacTrust public infrastructure drawings, the curbline walks occur in three locations around the shopping center development in accordance with SRC 803.035(l)(2)(B). The first location is along Boone Road adjacent to the mitigated channel. If a property line walk was installed the difference in topography of the drainage and the sidewalk, while providing the code required fill slope (2:1), would require fill within the mitigated channel. The second location is just south of the southwest corner of Kuebler Boulevard and 27th Avenue. If a property line walk was installed the difference in topography of the City's Raingarden and the sidewalk, while providing the code required fill slope (2:1), would fill the Raingarden reducing the capacity and would not be in conformance with City public works standards. The second location is just south of the southeast corner of Kuebler Boulevard and 27th Avenue. If a property line walk was installed the difference in topography of the Creek and the sidewalk, by providing the code required fill slope (2:1) would require fill within the Creek.

BICYCLE FACILITIES

Anuta Comment #32: *Bicycles are not mentioned in the TIA, but are a significant transportation consideration, as reflected in Chapter 7 of the Transportation Section of the Salem Comprehensive Plan. The intersection of Kuebler Blvd. and Boone Rd. SE is currently identified with a "caution" rating by the bicycle suitability map, and the Boone-Reed blind curve may be as well.*

Response: This is an inaccurate statement. Bicycle facilities were included in the May 2018 TIA. Additionally, the planned improvements include striped bicycle lanes and bicycle detection at the City traffic signals. Details of all off-site transportation improvements are provided on page 11 and 12 of the May 2018 TIA. As stated in the May 2018 TIA, all improvements are scheduled to be complete prior to the opening of the Kuebler Gateway Shopping Center.

EXPIRES: 06/30/20

November 28, 2018

Costco Salem
Kuebler Gateway Shopping Center
Salem, Oregon

LANDSCAPE DESIGN NARRATIVE

The landscape for this site is designed to enhance and enrich the visual experience of those entering, passing by, and viewing the site from all sides. The landscape is intended to meet or exceed all jurisdictional requirements, and contains over 400 new trees and 4,000 shrubs, and many thousand groundcovers, grasses, and accent plantings.

The landscape for this site is designed to reduce and optimize long term water use and maintenance. An emphasis has been placed on using native plants and / or drought resistant ornamentals that have proven to be adapted and successful in the Northwest climate. Trees, shrubs, and groundcovers are specified at sizes optimal for establishment, for preventing damage by foot traffic or vandalism, and for visual impact. Import sandy loam topsoil tilled into subgrade soils are used to promote healthy plant growth and reduce watering and maintenance demands, with a 3" depth of bark mulch in all planting areas to suppress weed growth and retain soil moisture.

All new landscape areas will be watered with an automatic, water efficient irrigation system, with sensors and controls for water use optimization. Low volume drip irrigation is designed for all interior parking lot areas, and rotator heads on wider perimeter areas to conserve water and maximize efficiency.

Oregon White Oaks

The landscape design emphasizes the planting of Oregon White Oak (*Quercus garryana*) on all perimeters, with 53 replacement Oaks, significantly more than the 16 required as mitigation for removal of the existing trees. In particular the Oaks are featured and grouped with evergreen trees on the naturalistic sloped area at southeast perimeter.

Planting Design

The overall planting design reduces reliance on manicured lawn, instead providing increased use of native shrub and groundcover plantings. Screening and buffering is provided along all perimeters and street frontages. Full and lush planting has been provided along south side of warehouse along Boone Road SE. Shade trees are dispersed throughout parking lots to provide shade and visual relief. Wide landscape and bio-infiltration areas are provided at east perimeter along 27th Avenue. Existing landscaped drainage easement areas are maintained along Boone Road SE and at the northeast corner of the site. Along the west side of warehouse, dense planting is provided on berms to screen compactors and loading areas.

KUEBLER BLVD.

27TH AVENUE

BATTLE CREEK ROAD

BOONE ROAD S.E.

RETAIL BLDG
6,100 SF

RETAIL
2,900 SF
LOT 2

RETAIL
6,100 SF
LOT 3

RETAIL
5,900 SF
LOT 1

EXISTING
BUILDING
14,820 SF
LOT 6

Salem Clinic
23,547 SF
LOT 5

COSTCO WHOLESALE
168,550 SF. MASTER FOOTPRINT

REPLACEMENT
OREGON WHITE
OAK TREES, TYP.

REPLACEMENT
OREGON WHITE
OAK TREES, TYP.

REPLACEMENT
OREGON WHITE
OAK TREES, TYP.

PLANTING WITHIN EXISTING
DRAINAGE EASEMENT TO REMAIN
(PLANT UNITS NOT INCLUDED)

PLANTING WITHIN EXISTING
DRAINAGE EASEMENT TO REMAIN
(PLANT UNITS NOT INCLUDED)

OH LINES

KUEBLER GATEWAY SHOPPING CENTER

SALEM, OREGON

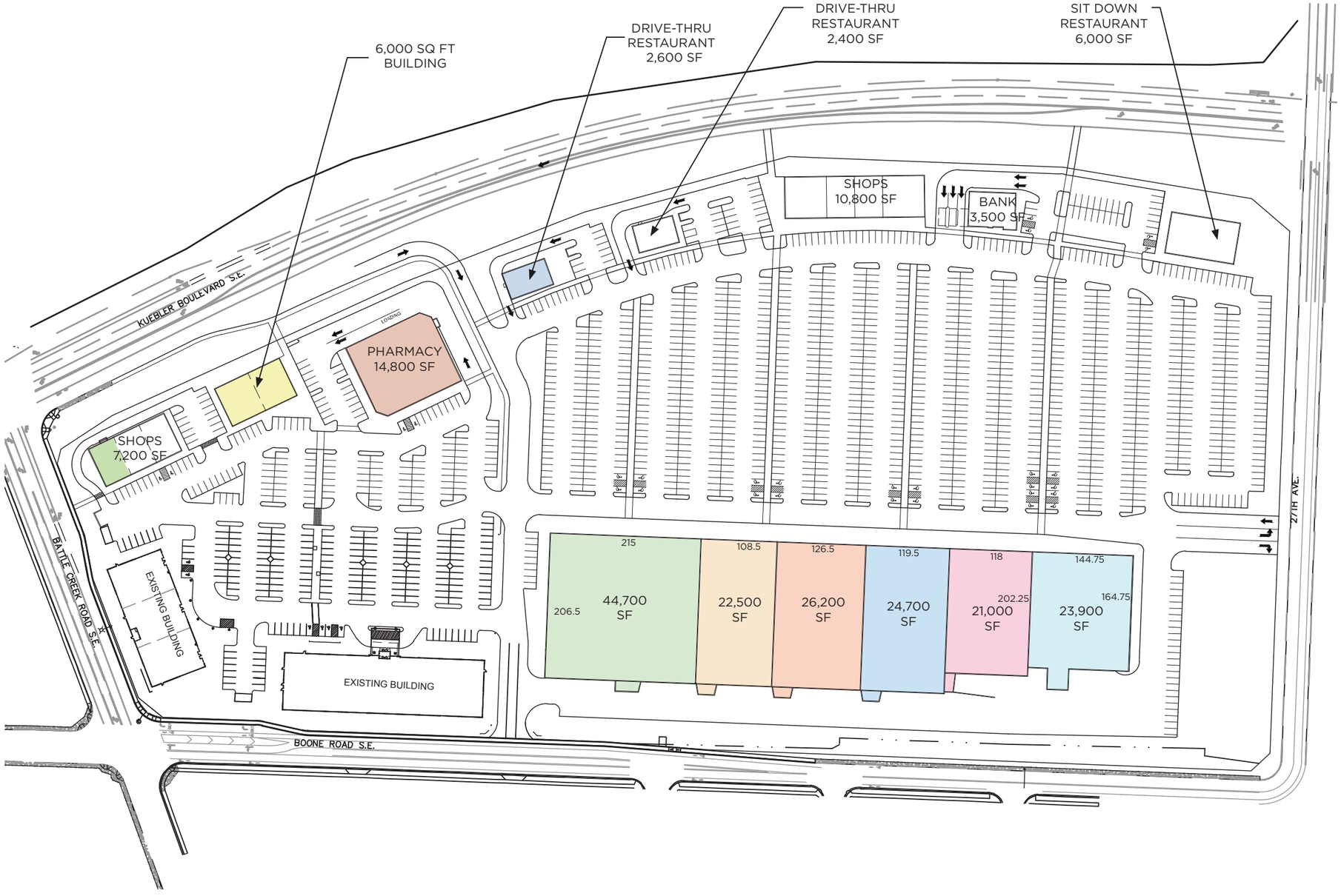
OVERALL LANDSCAPE PLAN

NOVEMBER 26, 2018

0 25' 50' 100'

1" = 50'-0"

EXHIBIT 5
Option 1



SITE AREA SF	1,232,500
BUILDING SF	258,600
COVERAGE %	21%
SHOPS SF	28,000
PHARMACY SF	14,800
BANK SF	3,500
GROCERY SF	44,700
JUNIOR ANCHORAGE SF	118,300
[EXISTING] OFFICE	38,300
DRIVE-THRU RESTAURANTS	5,000
SIT DOWN RESTAURANT	6,000
TOTAL	258,600
PARKING	1579
PARKING RATIO	6.1/1000

2120066.01 MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

KUEBLER
SALEM, OREGON
03-08-16

NORTH

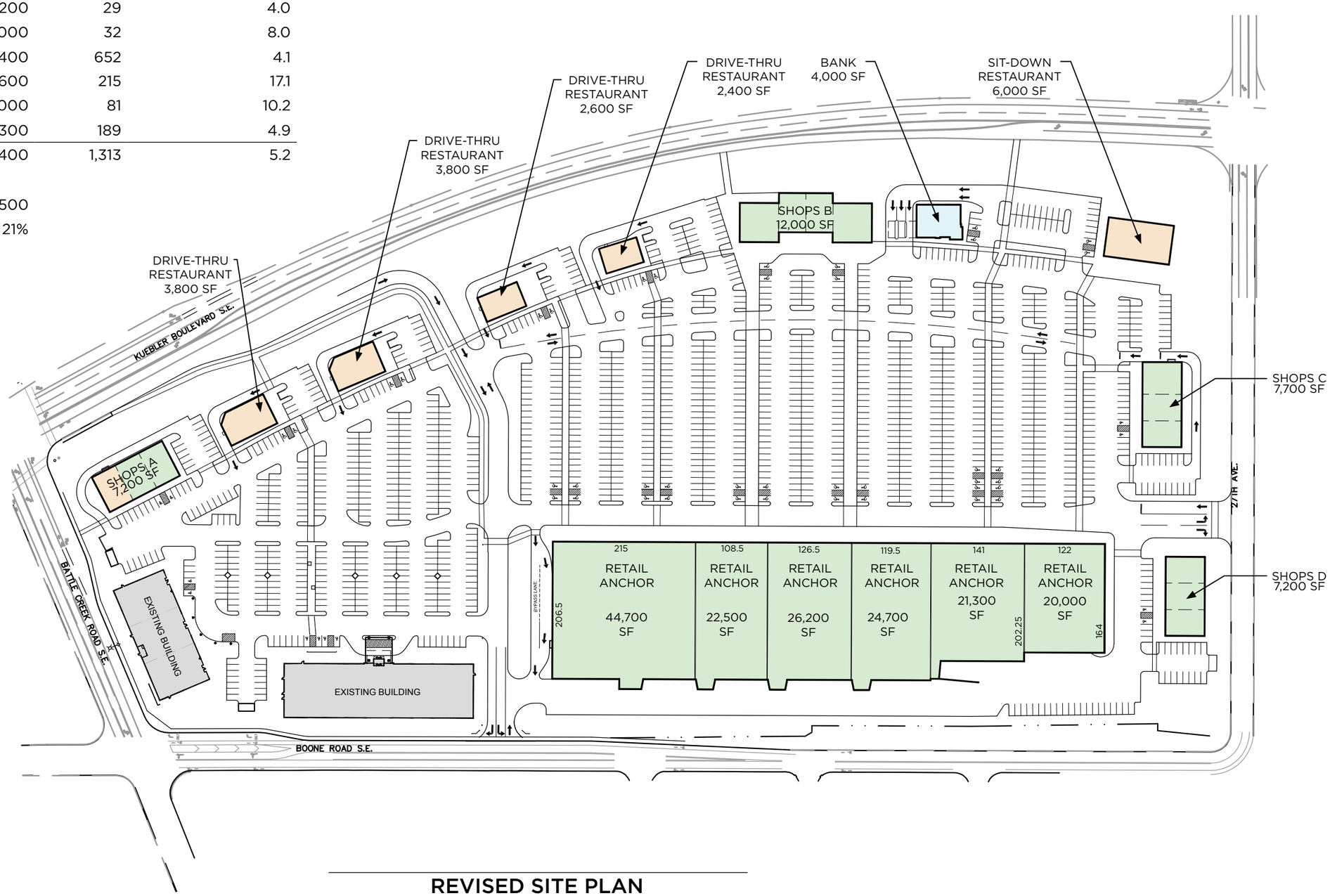
0 80 160 320 1"=160'

PACTRUST
Pacific Realty Associates, L.P.

EXHIBIT 5
Option 2

BUILDING	SF	STALLS	RATIO (/1000 SF)
SHOPS A	7,200	32	4.4
SHOPS B	12,000	52	4.3
SHOPS C	7,700	31	4.0
SHOPS D	7,200	29	4.0
BANK	4,000	32	8.0
RETAIL ANCHORS	159,400	652	4.1
DRIVE-THRU RESTAURANTS	12,600	215	17.1
SIT-DOWN RESTAURANT	6,000	81	10.2
EXISTING OFFICE	38,300	189	4.9
TOTAL	254,400	1,313	5.2

SITE AREA SF	1,232,500
COVERAGE %	21%



REVISED SITE PLAN

KUEBLER
SALEM, OREGON
05-16-16

NORTH

1"=160'

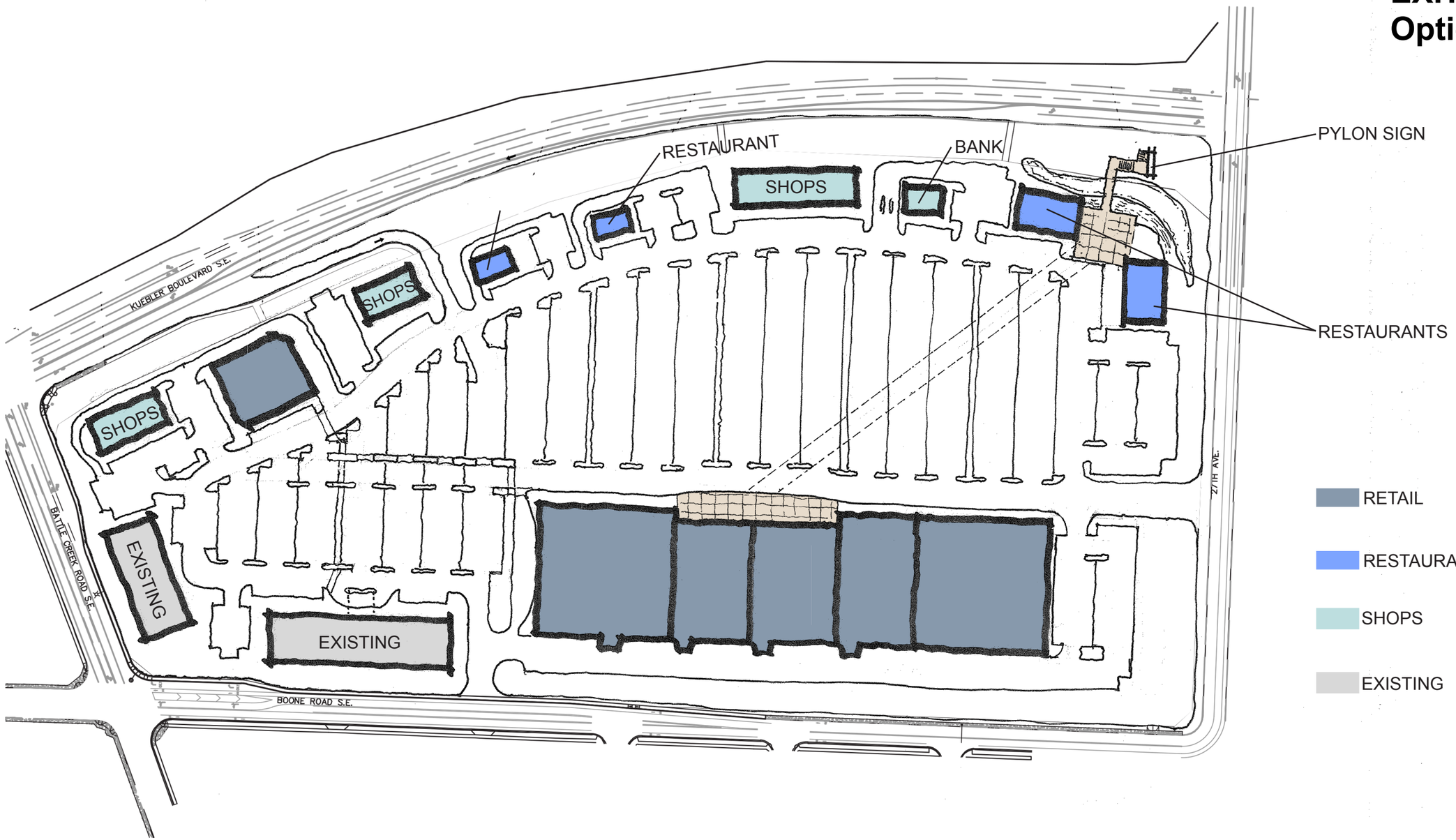
0 80 160 320

2120066.01

MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

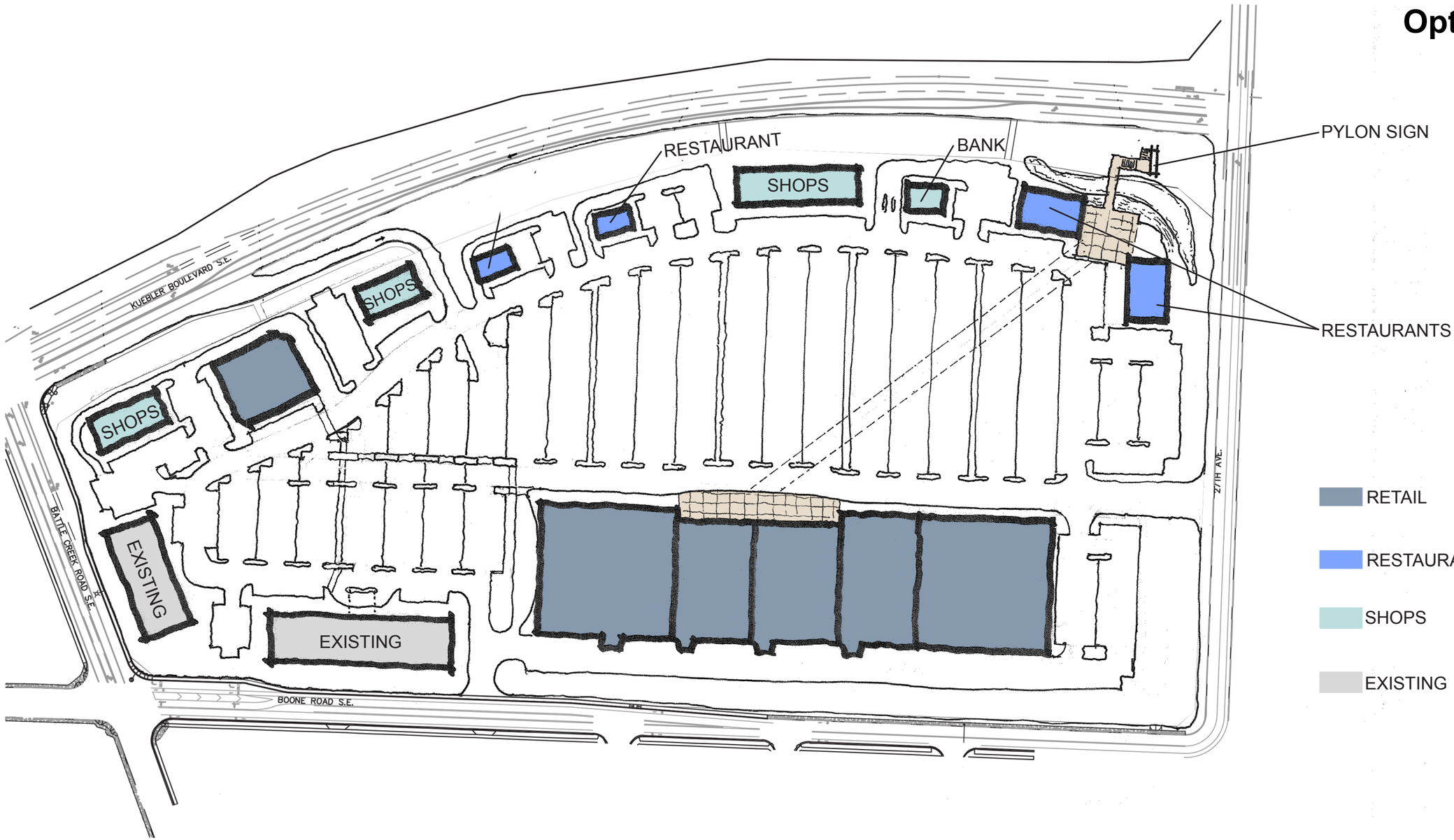
PACTRUST
Pacific Realty Associates, L.P.

EXHIBIT 5
Option 3



PacTrust
Pacific Realty Associates, L.P.

EXHIBIT 5
Option 4



2120066.01

MACKENZIE.
DESIGN DRIVEN | CLIENT FOCUSED

KUEBLER
SALEM, OREGON
03-22-16

NORTH

1"=160'
0 80 160 320

PACTRUST
Pacific Realty Associates, L.P.

DOWL

MEMORANDUM

TO: City of Salem
Matt Oyen, Pacific Reality Associates, LP (PacTrust)
Peter Kahn, Costco Whole Corporation

FROM: Jeff Shoemaker, PE

DATE: 11/28/18

SUBJECT: Response to Appeal of Decision – Kuebler Gateway Shopping Center

This memorandum responses to the stormwater comment in the South Gateway Neighborhood Association (SGNA) Appeal of Decision dated November 4th, 2018.

Under "Reasons for Appeal" comment #4 states:

4. Stormwater
As a "large" project, the proposed development is required to utilize surface stormwater detention and filtration, including runoff from the roof as specified on the drawings submitted with the recent subdivision actions. It appears that the current proposal may be violating State, Federal and City requirements relating to these important elements. Limited calculations based on total detention indicate that the project can meet a 5-year storm of 1.5 inches in 24 hours, but not the required 10-year storm standard or contain a 24-hour, 100-year storm as is being claimed.

Applicant Response:

The proposed storm design will meet the requirements of the City of Salem as listed in the Department of Public Works Administrative Rules Design Standards, Chapter 109, Division 004 and 012 dated January 2014, the Salem Revised Code Chapter 71, and the Stormwater Design Handbook for Developers and Large Projects dated May 2014.

The project has more than 10,000 sq.-ft of combined new and replaced impervious area; therefore, this project is classified as a "large project" (104.004.4.2(a)(3)). Large projects are subject to the City's water quality and water quantity standards using Green Stormwater Infrastructure (GSI) to the maximum extent feasible (MEF).

Water Quality

Per the City of Salem Public Works Administrative Rule 104.044.4.2(p), water quality treatment facilities are to be designed to treat 80 percent of the annual rainfall (1.38 inches over a 24-hour period). In addition, Appendix 4E of the Public Works Administrative Rule requires treatment of stormwater using Green Stormwater Infrastructure (GSI) to the maximum extent feasible (MEF), mitigating for 80 percent of the impervious surface.

To meet the City's water quality requirement, two vegetated swales (GSI facilities) are proposed along 27th Ave SE to treat and mitigate 90 percent of the onsite impervious surface, exceeding the 80 percent requirement. The vegetated swales are designed for stormwater treatment only, as high groundwater precludes the use of infiltration for disposal (see Drainage Report).

The remaining 10 percent of on-site impervious surface is to be treated using mechanical treatment methods due to grade restrictions conveying stormwater runoff to the vegetated

swales. One 2-cartridge StormFilter catch basin is proposed for the building loading dock basin, prior to discharging to the underground detention system.

The water quality design meets the applicable GSI standards to the MEF as prescribed by the City of Salem Code.

Water Quantity

Per the City of Salem Public Works Administrative Rule 104.044.4.2(p), water quantity flow control is required for large developments to protect downstream properties, infrastructure, and natural resources from increased stormwater runoff.

City Administrative Rule 104.044.4.2(p)(3)A requires developments to provide detention for half post-developed 2-year to half pre-developed 2-year storm event, and post-development 10-year to the pre-development 10-year storm event. Infiltration is not possible for disposal due to the classification of soil and presence of high groundwater on the site. Since infiltration is not feasible, City Administrative Rule 104.044.4.2(p)(3)B requires volume-based facilities to detain the post-development 100-year storm event runoff to the pre-development 100-year storm event. To meet the pre-development release rate requirements, a total detention of 133,750 cubic-feet of storage is proposed using three detention systems.

The detention systems each contain flow control and diversion structures engineered to regulate flow leaving the site to the applicable standards listed above. Calculations for detention and flow control can be referenced in the Drainage Report dated 11/7/18.

Salem Authority

The City of Salem operates under a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit in order to release stormwater runoff from the stormwater system directly to local streams. Per the City of Salem Public Works Administrative Rule 104.044.4.1(a)(3), the objective of the manual it to “Implement a stormwater treatment program reflecting the requirements associated with the National Pollution Discharge Elimination System (NPDES) Municipal Separate Strom System (MS4) Permit, Oregon Department of Environmental Quality (DEQ) Total Maximum Daily Load Program (TMDL), and the water quality needs of Salem’s urban waterways.”

Therefore, by meeting the stormwater requirements of the City of Salem, the project meets all applicable state and federal stormwater requirements.

Drainage Report

Kuebler Gateway Shopping Center

2322.14429.01

Prepared for

Costco Wholesale Corporation

999 Lake Drive

Issaquah, WA 98020

11/7/2018

Prepared for	Costco Wholesale Corporation
Project Name	Drainage Report
Job Number	2322.14429.01
Date	11/7/2018

DOWL
720 SW Washington Street, Suite 750
Portland, Oregon
97205

Telephone: 971-280-8641
Facsimile: 800-865-9847
jshoemaker@dowl.com

Name	Title	Date	Revision	Reviewer
RHH	Project Engineer	11/7/18		JRS

Executive Summary

The proposed Costco Salem development is located on Tax lot 1800, 1900, 2000, and 2100 off Kuebler Boulevard SE in Salem, Oregon (See Figure 1-1). The proposed development will construct a Costco Wholesale and a pad for a future commercial retailer. The site includes a commercial retail building with associated access drives, parking lot, and fuel station in the northeast corner of the site.

The proposed storm design will meet the requirements of the City of Salem as listed in the Department of Public Works Administrative Rules Design Standards, Chapter 109, Division 004 and 012 dated January 2014, the Salem Revised Code Chapter 71, and the Stormwater Design Handbook for Developers and Large Projects dated May 2014. The project has more than 10,000 sq.-ft of combined new and replaced impervious area; therefore, this project is classified as a "large project" (104.004.4.2(a)(3)). Large projects are subject to the City's water quality and water quantity standards using Green Stormwater Infrastructure (GSI) to the maximum extent feasible (MEF).

Water Quality

Per the City of Salem Public Works Administrative Rule 104.044.4.2(p), water quality treatment facilities are to be designed to treat 80 percent of the annual rainfall (1.38 inches over a 24-hour period). In addition Appendix 4E of the Public Works Administrative Rule requires treatment of stormwater using Green Stormwater Infrastructure (GSI) to the maximum extent feasible (MEF), mitigating for 80 percent of the impervious surface.

To meet the City's water quality requirement, two vegetated swales (GSI facilities) are proposed along 27th Ave SE to treat and mitigate 90 percent of the onsite impervious surface, exceeding the 80 percent requirement. The vegetated swales are designed for stormwater treatment only, as high groundwater precludes the use of infiltration for disposal (see Drainage Report page 9).

The remaining 10 percent of on-site impervious surface is to be treated using mechanical treatment methods due to grade restrictions conveying stormwater runoff to the vegetated swales. One 2-cartridge StormFilter catch basin is proposed for the building loading dock basin, prior to discharging to the underground detention system.

Water Quantity

Per the City of Salem Public Works Administrative Rule 104.044.4.2(p), water quantity flow control is required for large developments to protect downstream properties, infrastructure, and natural resources from increased stormwater runoff. City Administrative Rule 104.044.4.2(p)(3)A requires developments to provide detention for half post-developed 2-year to half pre-developed 2-year storm event, and post-development 10-year to the pre-development 10-year storm event.

In addition, due to the existing site soils, infiltration is not possible for disposal and the project proposes the use of underground detention below the site to provide flow control. City Administrative Rule 104.044.4.2(p)(3)B requires volume based facilities to detain the post-development 100-year storm event runoff to the pre-development 100-year storm event. To meet the pre-development release rate requirement, a total detention of 133,750 cubic-feet of storage is proposed using three detention systems.

The Costco Salem project proposes to utilize three groups of underground chambers to detain the post-development peak runoffs to the pre-development peak runoffs per the City standards.

Conveyance

The proposed conveyance system will maintain the existing drainage patters. The site will drain primarily to 27th Ave SE, with a small amount discharging to Boone Rd SE. The proposed conveyance system is designed to convey the 10-year storm event.

Conclusion

The proposed system meets and exceeds the City requirements for stormwater water quality treatment and detention as outlined in City of Salem Public Works Administrative Rule 104.044.4.2(p).

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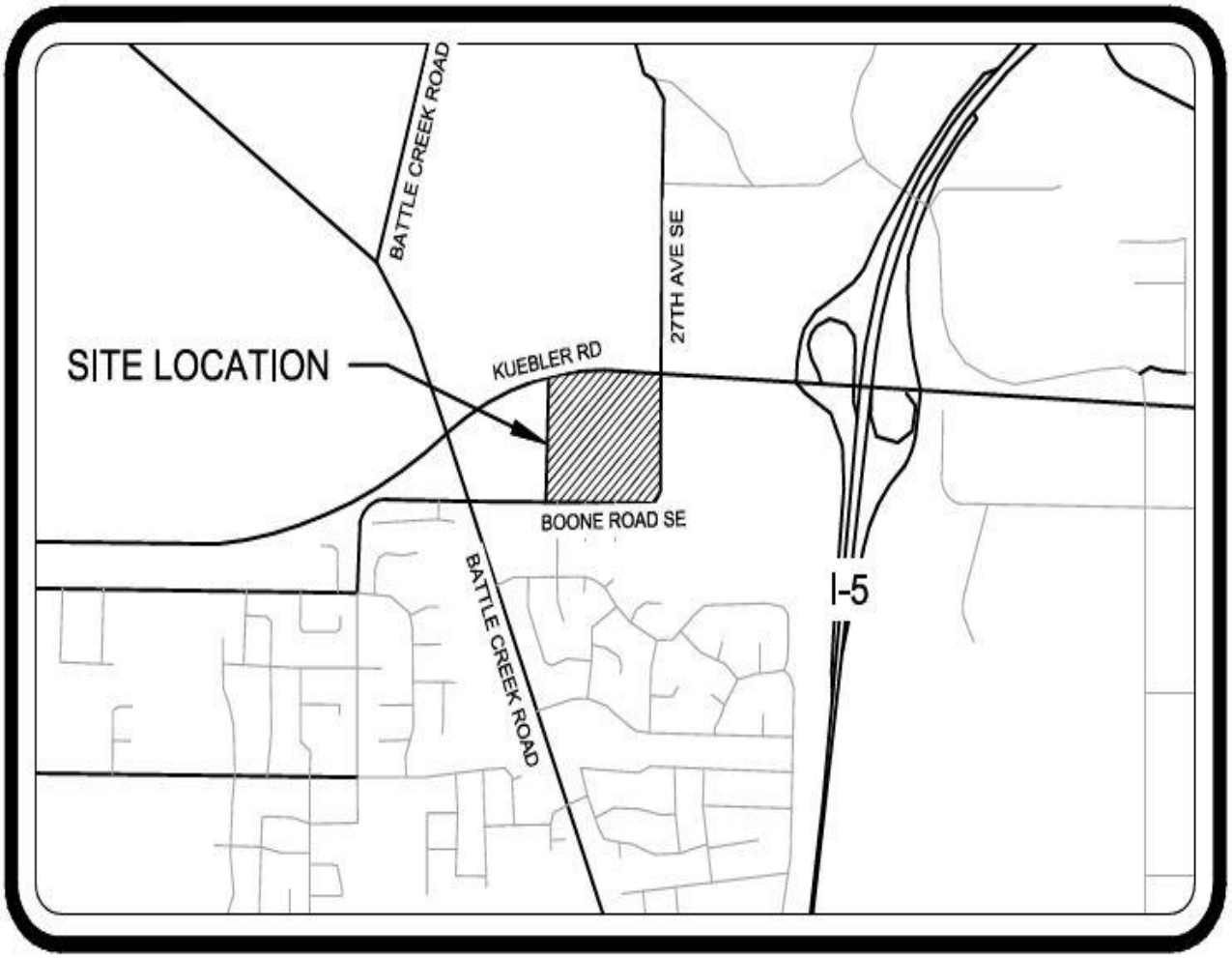
- Figure 2A – Proposed Overall Basin Delineation
- Figure 2B – Proposed Sub-Basin Delineation
- Figure 3 – Proposed Water Quality Layout
- Figure 4 – Proposed Underground Detention Layout
- xpswmm Pre-Developed and Post-Developed Results

- USGS Soil Map – Marion County
- Composite Curve Number Calculations
- Table 4D-6 – Runoff Curve Numbers
- Time of Concentration Calculation
- Water Quality Swale Design Calculation
- Geotechnical Report by Terracon Consultants, dated April 2018
- Kuebler Way Stormwater Report by WesTech Consultants, dated April 2010

1 VICINITY MAP

Figure 1-1 Vicinity Map



2 PROJECT DESCRIPTION

2.1 Project Overview

The proposed Costco Salem development is located on Tax lot 1800, 1900, 2000, and 2100 off Kuebler Boulevard SE in Salem, Oregon (See Figure 1-1). The proposed development will construct a Costco Wholesale, a commercial retail store. The site includes a commercial retail building with associated access drives, parking lot, and fuel station in the northeast corner of the site.

The proposed storm design will meet the requirements of the City of Salem as listed in the Department of Public Works Administrative Rules Design Standards, Chapter 109, Division 004 and 012 dated January 2014, the Salem Revised Code Chapter 71, and the Stormwater Design Handbook for Developers and Large Projects dated May 2014. The project has more than 10,000 sq.-ft of combined new and replaced impervious area; therefore, this project is classified as a “large project” and will follow the specified large project requirements.

3 EXISTING CONDITIONS

3.1 Topography

The existing site is a cleared and grass lined site, with a large grove of trees in the Southwest corner of the site. Historically, the site was undeveloped grass land with trees throughout the site. A historic stream went through the Southeast corner of the site. east portion of the site was a drive-in movie theater. The highest elevation of 205 is located in the center of the site. The lowest elevation of 198 is located in the southwest property corner. Site slopes range from 2.0% to nearly flat and slope downward to the west.

3.2 Climate

The site is in Salem, Oregon approximately 50 miles inland from the Pacific Ocean. There is a gradual change in seasons with defined seasonal characteristics. Average annual rainfall recorded in this area is 40 inches. Average snowfall is approximately 5.5 inches between December and February.

3.3 Site Geology

The underlying soil types are classified by the United States Department of Agriculture Soil Survey of Marion County, Oregon and are identified in Table 3-1 (See Technical Appendix A: USGS Soils Map - Marion County).

Table 3-1 Soil Characteristics

Soil Type	Hydrologic Group
Nekia Silty Clay Loam, 2 to 7 percent	C
Nekia Stony Silty Clay Loam, 2 to 12 percent	C
Salcum Silty Clay Loam, Basin, 0 to 6 percent	B

Soils are classified as B or C. Most of the site is group C soils and will be conservatively used for this analysis. Group C soils have low infiltration rates at the surface when thoroughly saturated.

3.4 Groundwater/Infiltration

The City of Salem Public Works Administrative Rule 104.044.4.3a(4)B requires a Geotechnical Engineer to investigate the site to determine the seasonally high groundwater. If seasonally high groundwater is encountered, GSI facilities are to be filtration facilities.

A Report of Geotechnical Engineering Services was completed for the Costco Salem site by Terracon Consultants dated April 16, 2018 as part of the Technical Appendix. Terracon performed several borings and test pits on the site to determine the groundwater elevations. Groundwater was encountered at varying depths, but as shallow as 4 feet below existing ground surface.

At the location of the proposed vegetated swales, Terracon performed boring explorations to determine the groundwater and pursue infiltration testing. Terracon found groundwater elevation to be shallow, and the report does not recommend infiltration stormwater facilities due to the shallow groundwater presence.

3.5 Hydrology

Stormwater runoff sheet flows inward to an existing stormwater sedimentation pond before discharging to the 27th Avenue SE right-of-way located along the eastern property boundary. Water quality treatment, detention, or infiltration is not provided on the site.

An existing ditch in the center of the site collects and conveys water to an existing stormwater pond on east boundary of the site. Stormwater is then discharged to 27th Avenue SE through a 24-inch storm line to the existing road side ditch along 27th Avenue.

The ditch along 27th Avenue conveys runoff to north to an existing public stormwater conveyance system at the intersection of Kuebler Boulevard and 27th Avenue. The public stormwater system then drains east of 27th Avenue to an existing conveyance ditch along the south side of Kuebler Boulevard. The existing ditch continues east, turning north just before Interstate 5. Both culverts drain to Mill Creek. The capacity of the existing stormwater conveyance in 27th Avenue and ditch along Kuebler Boulevard were not evaluated as part of this analysis, as the proposed development will detain for the 100-year storm event.

3.6 Curve Number

The curve number represents runoff potential from the soil. The major factors for determining the CN values are hydrologic soil group, cover type, treatment, hydrologic condition and antecedent runoff condition. A composite curve number was determined to be 69 for the site (See Technical Appendix: Composite Curve Number)

3.7 Time of Concentration

The time of concentration (T_C) as described in NEH-4 Chapter 15 is defined in two ways; the time for runoff to travel from the furthermost point of the watershed to the point in question, and the time from the end of excess rainfall to the point of inflection on the trailing limb of the unit hydrograph. Time of concentration can be estimated from several formulas. The NRCS method was used in this analysis.

The minimum time of concentration is 5 minutes in highly developed urban areas (i.e. parking lots) and the maximum is 100 minutes in rural areas. The existing time of concentration was calculated to be 30 minutes (See Technical Appendix: Time of Concentration).

3.8 Basin Areas

Basin areas for existing conditions is shown in Table 3-2. This basin was modeled as required by City of Salem standards for allowable outflow. City of Salem of standards requires existing pre-developed conditions to be undeveloped, mixed (See Technical Appendix: Exhibit 1 – Existing Basin Delineation).

Table 3-2 Existing Basin Areas

Basin	Impervious Area, ac	Pervious Area, ac	Total Area, ac
Onsite	0.27	20.70	20.97

4 PROPOSED CONDITIONS

4.1 Hydrology

Runoff from the proposed Costco Salem site is collected through a series of catch basins and conveyed to an underground detention system for quantity control and a vegetated swale for water quality treatment. The design of the vegetated swale is included within the water quality section of this report, and the design of the underground detention is included in the water quantity section of this report. The proposed system will discharge into the 27th Avenue right-of-way.

The proposed building loading dock will be treated with a new Contech Stormfilter system and underground detention is proposed for flow control due to grade feasibly limiting the connection to the vegetated swales. The StormFilter and underground detention system propose to discharge runoff to the public storm system in Boone Rd SE.

4.2 Curve Number

In the proposed condition, a curve number of 74 to be used for pervious surfaces and a curve number of 98 is to be used for impervious surfaces.

4.3 Time of Concentration

A time of concentration of 10 minutes was for our delineated basins.

4.4 Basin Areas

Impervious and pervious surface areas for the proposed conditions are shown in Table 4-1. The site is approximately 81.0% impervious in proposed conditions (See Technical Appendix: Exhibit 2 – Post-Developed Basin Delineation).

Table 4-1 Proposed Basin Areas

Basin ID	(Pavement, Roof, Other)	Impervious (ac)	Pervious (ac)	Total (ac)
Basin A (Detention NE)	Pavement	9.51	0.64	10.15
Basin A (Detention SE)	Pavement/Roof	6.71	0.33	7.04
Basin C (West)	Pavement	0.19	0.01	0.20
Basin 4	Pavement	0.34	0.00	0.34
Landscape Basin	Landscape	0.11	2.64	2.75
Subtotal	-	16.86	3.62	20.48
5	Off-Site	0.45	0.04	0.49

Basin 4 is the existing drive aisle developed part of the Kuebler Way in 2012. The Landscape basin represents the landscape area draining to the public ROW surrounding the Costco site (Kuebler Blvd SE, 27th Ave SE, and Boone Rd SE). Basin 5 drains off-site to the 27th Avenue SE public right-of-way. This area will be included in the public improvements drainage report by WesTech Engineering.

5 HYDROLOGIC ANALYSIS DESIGN GUIDELINES

5.1 Design Guidelines

The analysis and design criteria used for stormwater management described in this section will follow the City of Salem *Department of Public Works Administrative Rules Design Standards* dated January 2014. Division 004 subsection 4.2(o) describes the allowable flow determination methods including the selected SUBH method.

5.2 Hydrograph Method

The hydrograph method generates storm runoff based on physical characteristics of the site. The Santa Barbara Urban Hydrograph (SBUH) was used for this analysis. The SBUH method is based on the curve number (CN) approach, and uses the Soil Conservation Service's (SCS) equations for computing soil absorption and precipitation excess. The SBUH method converts the incremental runoff depths into instantaneous hydrographs, which are then routed through a virtual reservoir with a time delay equal to the basin time of concentration.

The runoff function of xpswmm generates surface and subsurface runoff based on design or measured rainfall conditions, land use and topography. xpswmm Version 15.1 was used for our hydrology and hydraulics analysis. xpswmm is based on the public EPA SWMM program. xpswmm is an approved method of analysis by the City of Salem.

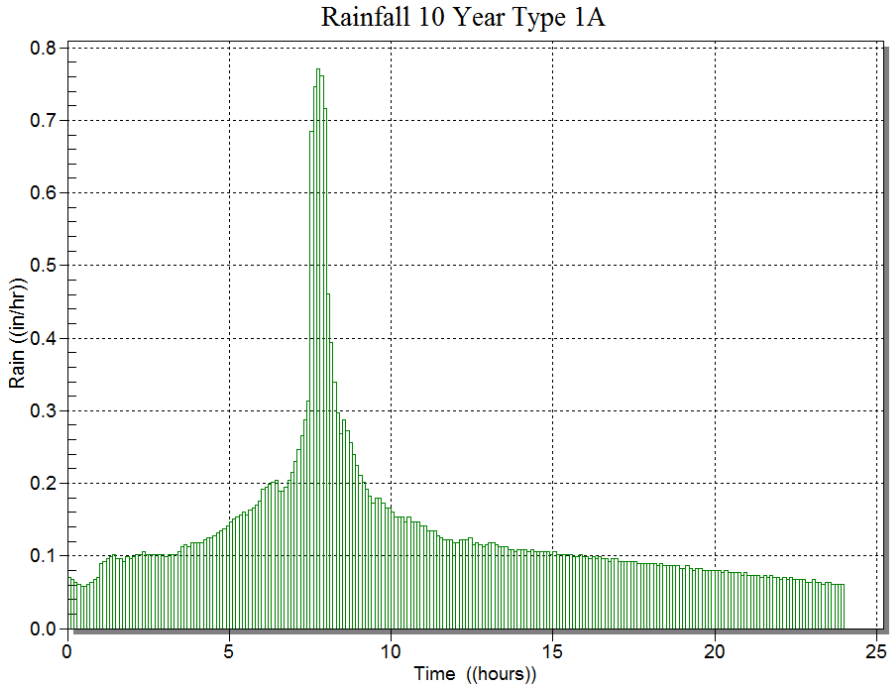
5.3 Design Storm

The rainfall distribution to be used within the City of Salem is the design storm of 24-hour duration based on the standard Type 1A rainfall distribution. Table 4-1 shows total precipitation depths for different storm events. The storm distribution for a type 1A 24-hour rainfall distribution for a 10-year storm event is shown in Figure 4-1.

Table 5-1 Precipitation Depth

Recurrence interval (years)	Total Precipitation Depth (in)
WQ	1.38
2	2.20
10	3.20
100	4.40

Figure 5-1 10-Year Type 1A Rainfall Ditribution



6 CONVEYANCE ANALYSIS

6.1 Design Guidelines

The analysis and design criteria described in this section will follow Section 4.8 Conveyance Systems of the *City of Salem Administrative Rules.* The manual requires storm drainage systems and facilities be designed to convey the 10-year storm event for drainage areas less than 50 acres. A Manning's 'n' value of 0.013 was selected for all storm drain pipes per the City of Salem standards. The Manning's 'n' value is 8 percent higher than the recommended Manning's 'n' value for concrete pipe (n = 0.012) to account for entrance, exit, junction, and bend head losses.

Catch basins are proposed within the new customer parking lot to collect and convey stormwater to the underground detention and stormwater vegetated swale.

6.2 System Capacities

The proposed conveyance system was designed to convey and contain the peak runoff from a 10-year design storm. The proposed conveyance system will have sufficient capacity to handle all storm events up to and including the 100-year storm event without flooding.

7 FLOODWAY & FLOODPLAIN ANALYSIS

The site is not located within the floodplain.

8 SOURCE CONTROL

The proposed project does include garbage and recycling for the new retail store. Garbage and recycling will be handled with sealed compactors that are connected to the west side of the building on a concrete slab. The slab is graded hydraulically isolated draining to a sanitary sewer catch basin tied to the on-site sanitary system, ultimately discharging to the public system in 27th Ave SE.

No separate outdoor garbage or recycling disposal locations are proposed with the project.

9 WATER QUALITY

9.1 Water Quality Guidelines

Per the City of Salem Public Works Administrative Rule 104.044.4.2(p), water quality treatment facilities are to be designed to treat 80 percent of the annual rainfall (1.38 inches over a 24-hour period). In addition Appendix 4E of the Public Works Administrative Rule requires treatment of stormwater using GSI to the MEF, mitigating for 80 percent of the impervious surface.

To meet the City's water quality requirement, two vegetated swales (GSI facilities) are proposed along 27th Ave SE to treat and mitigate 90 percent of the onsite impervious surface, exceeding the 80 percent requirement. The vegetated swales are designed to provide filtration treatment only, as high groundwater precludes the use of infiltration for disposal (see Drainage Report page 13).

The remaining 10 percent of on-site impervious surface is to be treated using mechanical treatment methods due to grade restrictions conveying stormwater runoff to the vegetated swales. One 2-cartridge Contech StormFilter catch basin is proposed for the building loading dock basin, prior to discharging to the underground detention system.

9.2 Water Quality Facility

Water quality will be provided with one Contech StormFilter (on the west side of the site), and two vegetated swales located on the east side of the property, downstream from the

underground detention per the City of Salem Public Works standards. The vegetated swales will treat 90% of onsite impervious area, exceeding the GSI treatment standard. The remaining area will be treated by StormFilter Catch Basin.

Swales are landscaped reservoirs that collect and treat stormwater runoff through vegetation and soil media. They also provide pollutant reduction and flow attenuation to reduce hydraulic impacts from urban developments on downstream rivers. Specific elements are incorporated into the swale design to increase the effectiveness of this stormwater facility type. Design elements include using soil media to provide stormwater filtration and vegetation to will provide plant uptake. The area draining to each swale, the calculated water quality flow, and design parameters are listed in Table 9-1. The swale section is listed below:

- Freeboard Depth: 8 inches
- Treatment Water Depth: 4 inches
- Growing Media Depth: 18 inches

Due to high groundwater on the site, the proposed vegetated swales are to be water quality treatment facilities only (filtration) and will not be utilized for infiltration disposal.

Per the City of Salem Public Works Administrative Rule 104.044.4.4(b)2c, a sedimentation basin or pretreatment structural shall be provided prior to the inlet of the GSI facility to collect debris and sediment. The Costco site proposes pretreatment manholes prior to stormwater runoff being conveyed to the vegetated swales. The pretreatment manholes are 60-inch diameter manholes, with a 3-foot sump and snout on the outlet to trap sediment and oils from entering the vegetated swales. In addition, at the head of the swales is a small rock forebay to reduce the energy of the stormwater outfall, capture any final sediment prior to the entering the vegetated swales, and spread the outfall flow across the entire bottom width of the swale to ensure proper treatment of the runoff.

The proposed vegetated swales for the site have a large bottom width to provide treatment for the water quality storm event. To ensure the swales do not experience channelization, check dam flow spreaders are proposed approximately every 30 feet to dispense the flow evenly across the bottom of the swale. The equal flow across the bottom will also ensure runoff is properly treated by the swale prior to discharging to the public system in 27th Ave SE.

In addition, swales for Basins A and B have been sized to over-treat for small amounts of impervious surface which drains off the site and cannot be captured. This includes 1,493 sq-ft of impervious surface draining off from the Landscape Basin toward Kuebler Blvd SE and 3,112 sq.-ft of impervious surface draining off from the Landscape Basin toward Boone Rd SE.

Table 9-1 Onsite Vegetated Swale

Basin ID	Impervious Area (ac)	Pervious Area (ac)	Water Quality Flow (cfs)	Design Length (ft)	Bottom Width (ft)	Treatment Depth (in)	Total Depth (in)
A	9.51	0.64	1.57	186	21	4	4
B	6.61	0.30	0.97	180	15	4	4

A Contech StormFilter will provide treatment for the previously listed areas not draining to the swale. StormFilters are designed to treat urban runoff including TSS, soluble heavy metals, total nutrients, oil, and grease by providing a high level of water quality treatment. Each cartridge filter has a treatment capacity of 0.033 cfs (15 gpm). The maximum bypass flow is 1.80 cfs. The selected StormFilter contains cartridges filled with ZPG filter media (a mixture of zeolite, perlite, and granular activated carbon), which are designed to remove sediment, metals, and

stormwater pollutants from stormwater runoff. The required number of cartridges is shown in Table 9-2.

Table 9-2 Onsite Mechanical Water Quality Facilities

Basin ID	Cartridge Size	Impervious Area (sf)	Water Quality Flow Rate (cfs)	Quantity of Cartridges
C	Standard	8,537	0.05	2.0

Table 9-3 Off-Site Water Quality Facilities

Basin ID	Proposed Basin Area (Pavement, Roof, Other)	Impervious (ac)	Pervious (ac)	Total (ac)
Basin 4	Pavement	0.34	0.00	0.34
Landscape Basin	Landscape	0.00	2.43	2.43
5	Off-Site	0.38	0.04	0.42

Basin 4 is treated the existing drive aisle developed part of the Kuebler Way in 2012. Basin 4, the existing drive aisle between the Phase 1 Kuebler Way development and the proposed Costco site, currently has water quality treatment provided by a WQ catch basin installed as part of the Kuebler Way development (see Appendix for Kuebler Way Stormwater Report dated April 2010). The Landscape basin represents the landscape area draining to the public ROW surrounding the Costco site (Kuebler Blvd SE, 27th Ave SE, and Boone Rd SE). Basin 5 drains off-site to the 27th Avenue SE public right-of-way, and water quality treatment is provided in the off-site public improvements. See public improvements drainage report by WesTech Engineering water quality treatment.

10 WATER QUANTITY

10.1 Water Quantity Guidelines

Per the City of Salem Public Works Administrative Rule 104.044.4.2(p), water quantity flow control is required for large developments to protect downstream properties, infrastructure, and natural resources from increased stormwater runoff. City Administrative Rule 104.044.4.2(p)(3)A requires developments to provide detention for half post-developed 2-year to half pre-developed 2-year storm event, and post-development 10-year to the pre-development 10-year storm event.

In addition, due to the existing site soils, infiltration is not possible for disposal and the project proposes the use of underground detention below the site to provide flow control. City Administrative Rule 104.044.4.2(p)(3)B requires volume based facilities to detain the post-development 100-year storm event runoff to the pre-development 100-year storm event. To meet the pre-development release rate requirement, a total detention of 133,750 cubic-feet of storage is proposed using three detention systems.

The Costco Salem project proposes to utilize three groups of underground chambers to detain the post-development peak runoffs to the pre-development peak runoffs per the City standards.

10.2 Facility Design

Detention will be provided within the proposed underground chamber detention system. Three systems have been designed to dry detention pond.

10.3 Release Rates

The allowable release rates for the site are based on the existing site generated ½-2 year storm event, 10-yeat storm event, and 100-year storm event release rate.

10.4 Basin Runoff

Table 10-1 lists the runoff rates for existing and proposed conditions for the site during the 2, 10, and 100-year storm events for the entire property. (See Technical Appendix: Existing and Proposed Hydrographs).

Table 10-1 Basin Runoff Rates

Basin A (NE Detention)		
Recurrence Interval (years)	**Existing Peak Runoff Rate (cfs)**	**Proposed Peak Runoff Rate (cfs)**
1/2 - 2 year	0.097	0.096
10	0.662	0.654
100	1.973	1.863

Basin B (NE Detention)		
Recurrence Interval (years)	**Existing Peak Runoff Rate (cfs)**	**Proposed Peak Runoff Rate (cfs)**
1/2 - 2 year	0.063	0.062
10	0.429	0.424
100	1.279	1.108

Basin C (West Detention)		
Recurrence Interval (years)	**Existing Peak Runoff Rate (cfs)**	**Proposed Peak Runoff Rate (cfs)**
1/2 - 2 year	0.002	0.002
10	0.012	0.012
100	0.037	0.027

10.5 Stage and Volume

The proposed site requires a total detention of 133,750 CF to detain the post-developed 100-year storm event to the pre-developed. Manufactured chambers are proposed to provide the required detention storage volume. The chamber facilities are designed such the top of the chambers are below the lowest catch basin rim elevation and more than a foot of freeboard is provided to the proposed building.

As previously stated, Basin 4 was constructed under the Kuebler Way development and detention was provided for this Basin under the development. Basin 5 drains to 27th Ave SE public right-of-way and will be detained under the public improvements portion of the project.

The water quantity depth and volume are provided in Table 10-2

Table 10-2 Water Quantity Detention Design

Basin	Detention Volume (CF)
A	78,300
B	53,800
C	1,650
Total	133,750

Basin 4 is the existing drive aisle developed part of the Kuebler Way in 2012. Detention was provided for Basin 4 as part of the Kuebler Way development (see Appendix for Kuebler Way Stormwater Report dated April 2010). The Landscape basin represents the landscape area draining to the public ROW surrounding the Costco site (Kuebler Blvd SE, 27th Ave SE, and Boone Rd SE). Basin 5 drains off-site to the 27th Avenue SE public right-of-way, and detention is provided under the public improvements. See public improvements drainage report by WesTech Engineering water quality treatment.

The proposed flow control utilizes the underground detention and a flow control tee structure within a 60-inch storm manhole. Table 10-3 contains the flow control tee size and elevation information, overflow, and what storm event the flow control information is designed to meet.

Table 10-3 Water Quantity Detention Flow Control Structure

	Elevation	Diameter (in)	Storm Event
Basin A (NE Detention)			
Bottom Orifice	352.38	1.25	Pre-Developed 1/2 - 2-year Event
Middle Orifice	356.08	4.94	Pre-Developed 10-year Event
Overflow Weir	357.08	12.00	Post-Developed WQ Event
Overflow	356.98	15.00	Pre-Developed 100-year Event
Basin B (SE Detention)			
Bottom Orifice	355	1.25	Pre-Developed 1/2 - 2-year Event
Middle Orifice	357.35	4.81	Pre-Developed 10-year Event
Overflow Weir	358.01	12.00	Post-Developed WQ Event
Overflow	357.90	15.00	Pre-Developed 100-year Event
Basin C (West Detention)			
Bottom Orifice	357.34	0.375	Pre-Developed 1/2 - 2-year Event
Middle Orifice	358.44	3.00	Pre-Developed 10-year Event
Overflow Weir	359.09	12.00	Pre-Developed 100-year Event

11 SUMMARY

The proposed water quality and quantity design follows the City of Salem *Public Works Administrative Rules Design Standards* dated January 2014.

The proposed treatment system includes two vegetated swales and Contech StormFilter treatment facility to treat the impervious area not draining to the swales. 90 percent of the all

treatment will occur within GSI facilities, beyond the 80 percent minimum requirement. The proposed storm system was designed to provide flow control and detain the ½ - 2-year storm event, the 10-year storm event, and the 100-year storm event as required by the City stormwater standards.

Therefore, the proposed storm system meets the City of Salem standards.

Technical Appendix

BASIN AREAS

BASIN 1:
- IMPERVIOUS AREA - 0.00
- PERVIOUS AREA - 10.77
- TOTAL AREA - 10.77

BASIN 2:
- IMPERVIOUS AREA - 0.00
- PERVIOUS AREA - 2.72
- TOTAL AREA - 2.72

BASIN 3:
- IMPERVIOUS AREA - 0.00
- PERVIOUS AREA - 0.83
- TOTAL AREA - 0.83

BASIN 4:
- IMPERVIOUS AREA - 0.27
- PERVIOUS AREA - 0.00
- TOTAL AREA - 0.27

BASIN 5:
- IMPERVIOUS AREA - 0.00
- PERVIOUS AREA - 1.45
- TOTAL AREA - 1.45

BASIN 6:
- IMPERVIOUS AREA - 0.00
- PERVIOUS AREA - 2.88
- TOTAL AREA - 2.88

BASIN 7:
- IMPERVIOUS AREA - 0.00
- PERVIOUS AREA - 2.06
- TOTAL AREA - 2.06

BASIN 7

BASIN 1

TC FLOW PATH (TYP)

BASIN 4 (OUTER)

BASIN 2

BASIN 3

BASIN 6

BASIN 5

WETLANDS AREA

BOONE RD.

27TH AVENUE

N

100 0 100

SCALE IN FEET

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COSTCO SALEM
EXISTING BASIN AREAS

PROJECT	14429-01
DATE	2018-11-07

FIGURE 1

BASIN AREAS

NORTHEAST DETENTION:
- IMPERVIOUS AREA - 9.51
- PERVIOUS AREA - 0.64
- TOTAL AREA - 10.15

SOUTHEAST DETENTION:
- IMPERVIOUS AREA - 6.71
- PERVIOUS AREA - 0.33
- TOTAL AREA - 7.04

WEST DETENTION:
- IMPERVIOUS AREA - 0.19
- PERVIOUS AREA - 0.01
- TOTAL AREA - 0.20

BASIN 4:
- IMPERVIOUS AREA - 0.34
- PERVIOUS AREA - 0.00
- TOTAL AREA - 0.34

WQ TREATMENT UNDER PREVIOUS KUEBLER GATEWAY SUBDIVISION STORMWATER MANAGEMENT PLAN

BASIN 5:
- IMPERVIOUS AREA - 0.45
- PERVIOUS AREA - 0.04
- TOTAL AREA - 0.49

BASIN INCLUDED IN SE 27TH AVE PUBLIC IMPROVMENTS

LANDSCAPE:
- IMPERVIOUS AREA- 0.11
- PERVIOUS AREA - 2.65
- TOTAL AREA - 2.75

LANDSCAPE BASIN

717 SF IMPERVIOUS TREATED WITH WQ SWALE

776 SF IMPERVIOUS TREATED WITH WQ SWALE

BASIN A (NE DETENTION)

BASIN 5

BASIN C (WEST DETENTION)

BASIN B (SE DETENTION)

BASIN 4 (OFF)

EXISTING WQ CB

LANDSCAPE BASIN

3,112 SF IMPERVIOUS TREATED WITH WQ SWALE

RETAIL 7,500 SF LOT 3

Salem C 23,547 LOT

OH LINES

WETLANDS AREA

N

100 0 100

SCALE IN FEET

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COSTCO SALEM
PROPOSED OVERALL BASIN AREAS

PROJECT 14429-01
DATE 2018-11-07

FIGURE 2A

\\BL-HG-FS04\BL-Projects\22114429-01\40\Study\Drain\Exhibits\PROPOSED BASIN AREAS.dwg PLOT DATE 2018-11-12 12:35 SAVED DATE 2018-11-09 17:12 USER: rhalvorson

BASIN AREAS

NORTHEAST DETENTION:
- IMPERVIOUS AREA - 9.51
- PERVIOUS AREA - 0.64
- TOTAL AREA - 10.15

SOUTHEAST DETENTION:
- IMPERVIOUS AREA - 6.71
- PERVIOUS AREA - 0.33
- TOTAL AREA - 7.04

WEST DETENTION:
- IMPERVIOUS AREA - 0.19
- PERVIOUS AREA - 0.01
- TOTAL AREA - 0.20

BASIN 4:
- IMPERVIOUS AREA - 0.34
- PERVIOUS AREA - 0.00
- TOTAL AREA - 0.34

WQ TREATMENT UNDER PREVIOUS KUEBLER GATEWAY SUBDIVISION STORMWATER MANAGEMENT PLAN

BASIN 5:
- IMPERVIOUS AREA - 0.45
- PERVIOUS AREA - 0.04
- TOTAL AREA - 0.49

BASIN INCLUDED IN SE 27TH AVE PUBLIC IMPROVMENTS

LANDSCAPE:
- IMPERVIOUS AREA- 0.11
- PERVIOUS AREA - 2.65
- TOTAL AREA - 2.75

BASIN 5

BASIN 4 (OFF)

BASIN 18
AREA: 26575
PERVIOUS: 2926
IMPERVIOUS: 23649

BASIN 19
AREA: 3738
PERVIOUS:315
IMPERVIOUS: 3417

BASIN 20
AREA: 4066
PERVIOUS: 0
IMPERVIOUS: 4066

BASIN 21
AREA: 4838
PERVIOUS: 1769
IMPERVIOUS: 2297

BASIN 9
AREA: 19274
PERVIOUS: 1419
IMPERVIOUS: 17855

BASIN 11
AREA: 21379
PERVIOUS: 1731
IMPERVIOUS: 19648

BASIN 12
AREA: 26130
PERVIOUS: 1023
IMPERVIOUS: 25107

BASIN 13
AREA: 63480
PERVIOUS: 2160
IMPERVIOUS: 61320

BASIN 14
AREA: 9007
PERVIOUS: 3848
IMPERVIOUS: 5159

BASIN 15
AREA: 4570
PERVIOUS: 2676
IMPERVIOUS: 1894

BASIN 16
AREA: 20815
PERVIOUS: 5000
IMPERVIOUS: 15815

BASIN 17
AREA: 3167
PERVIOUS: 1221
IMPERVIOUS: 1946

BASIN 22
AREA: 19284
PERVIOUS: 1018
IMPERVIOUS:18266

BASIN 23
AREA: 69738
PERVIOUS: 4375
IMPERVIOUS: 65363

BASIN 24
AREA: 25665
PERVIOUS: 1573
IMPERVIOUS: 24092

BASIN 6
AREA: 26575
PERVIOUS: 2926
IMPERVIOUS: 23649

BASIN7
AREA: 78532
PERVIOUS: 8010
IMPERVIOUS: 70522

BASIN 8
AREA:40927
PERVIOUS:1750
IMPERVIOUS: 39177

BASIN 10
AREA:28667
PERVIOUS: 1055
IMPERVIOUS:27612

BASI N 4
AREA: 80722
PERVIOUS: 9786
IMPERVIOUS: 70936

BASIN 2
AREA:8448
PERVIOUS: 144
IMPERVIOUS: 8304

BASIN 3
AREA: 20232
PERVIOUS: 6339
IMPERVIOUS: 13893

BASIN 1
AREA: 67387
PERVIOUS: 0
IMPERVIOUS: 67387

BASIN 5
AREA: 67312
PERVIOUS: 0
IMPERVIOUS: 101,376

RETAIL 7,500 SF LOT 3

Salem Clinic 23,547 SF LOT 5

EXISTING WQ CB

WETLANDS AREA

OH LINES

IE 16" PVC=3

IE 12" PVC=341.72'

IE 12" RCP=345.87'

IE 12" CP=347.46'

IE 12" DPE=348.22'

IE 24" HDPE=352.35'

IE 12" SDL=358.19'

100 0 100
SCALE IN FEET

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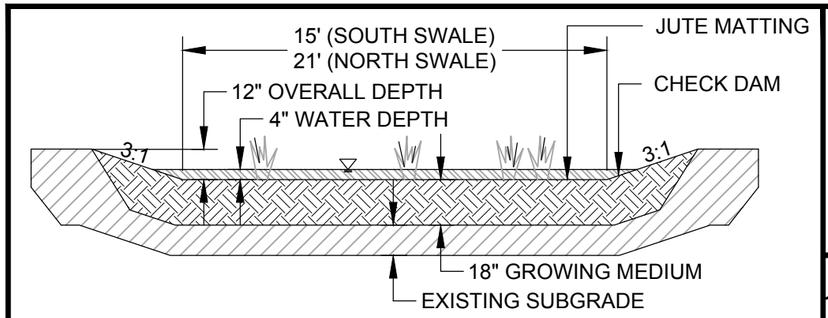
COSTCO SALEM
PROPOSED SUB-BASIN AREAS

PROJECT	14429-01
DATE	2018-11-07

FIGURE 2B



VEGETATED STORMWATER QUALITY SWALE

SCALE: 1" = 5'

TREATMENT FACILITIES

- (A) PROPOSED VEGETATED STORMWATER QUALITY SWALE. (NORTH)
- (B) PROPOSED VEGETATED STORMWATER QUALITY SWALE. (SOUTH)
- (C) PROPOSED 2 FILTER WATER QUALITY CATCH BASIN.

CHECK DAMS (TYP)

FAST FOOD 2,138 SF LOT 2

RETAIL 7,500 SF LOT 3

Salem Clinic 23,547 SF LOT 5

OH LINES

N

100 0 100

SCALE IN FEET

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COSTCO SALEM
PROPOSED TREATMENT FACILITIES

PROJECT	14429-01
DATE	2018-10-07

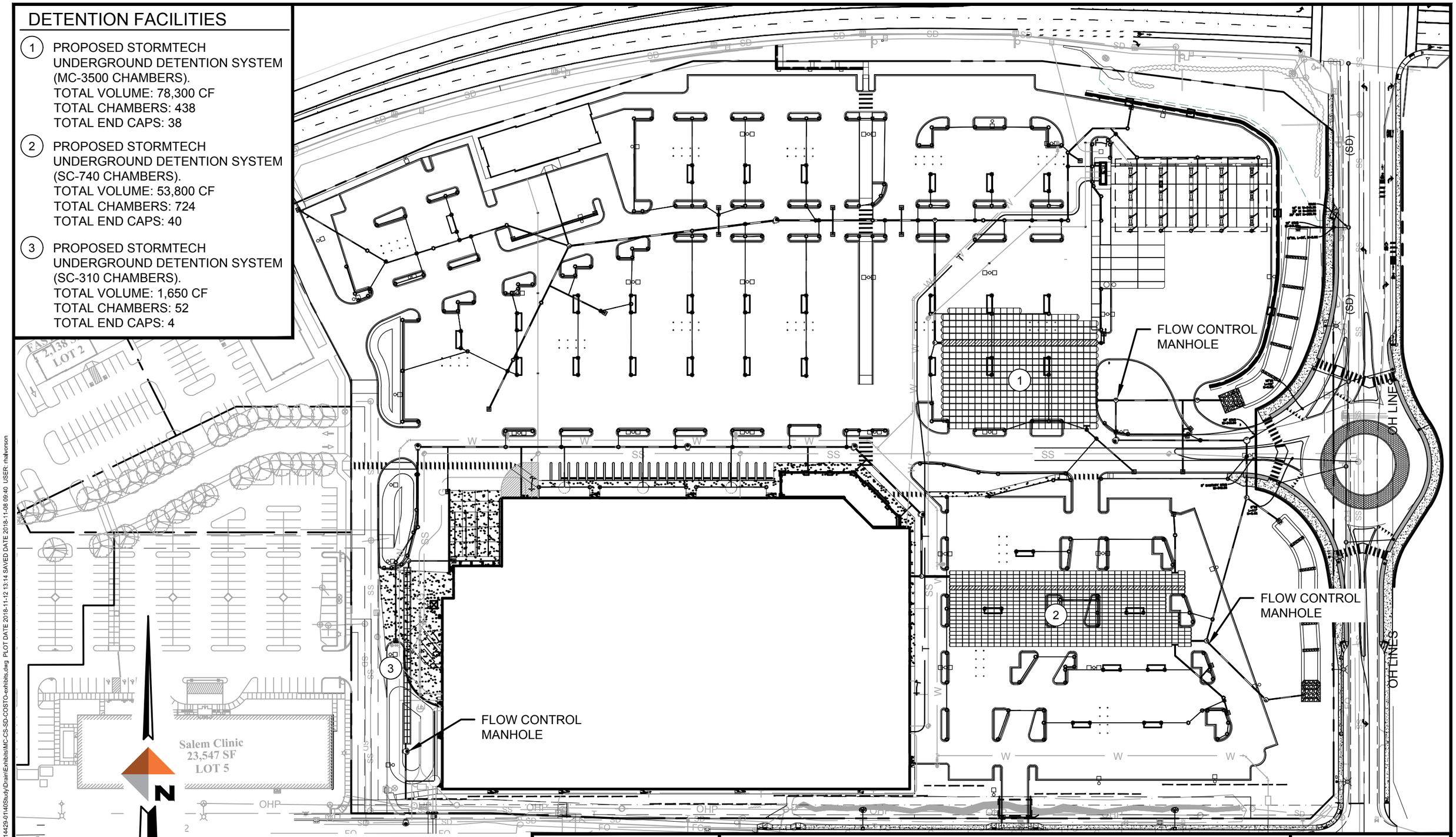
FIGURE 3

DETENTION FACILITIES

1. PROPOSED STORMTECH UNDERGROUND DETENTION SYSTEM (MC-3500 CHAMBERS).
   TOTAL VOLUME: 78,300 CF
   TOTAL CHAMBERS: 438
   TOTAL END CAPS: 38

2. PROPOSED STORMTECH UNDERGROUND DETENTION SYSTEM (SC-740 CHAMBERS).
   TOTAL VOLUME: 53,800 CF
   TOTAL CHAMBERS: 724
   TOTAL END CAPS: 40

3. PROPOSED STORMTECH UNDERGROUND DETENTION SYSTEM (SC-310 CHAMBERS).
   TOTAL VOLUME: 1,650 CF
   TOTAL CHAMBERS: 52
   TOTAL END CAPS: 4



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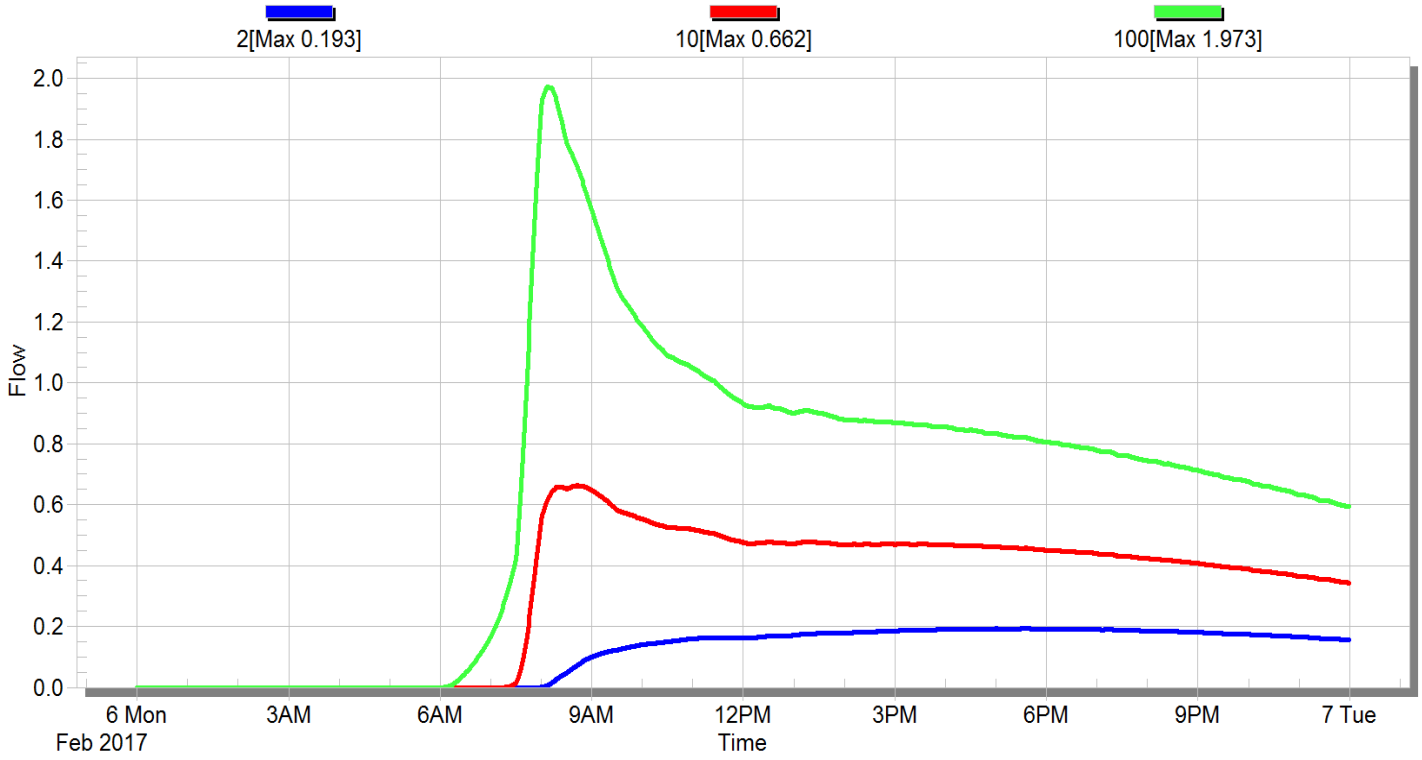
COSTCO SALEM
PROPOSED DETENTION FACILITIES

PROJECT	14429-01
DATE	2018-11-17

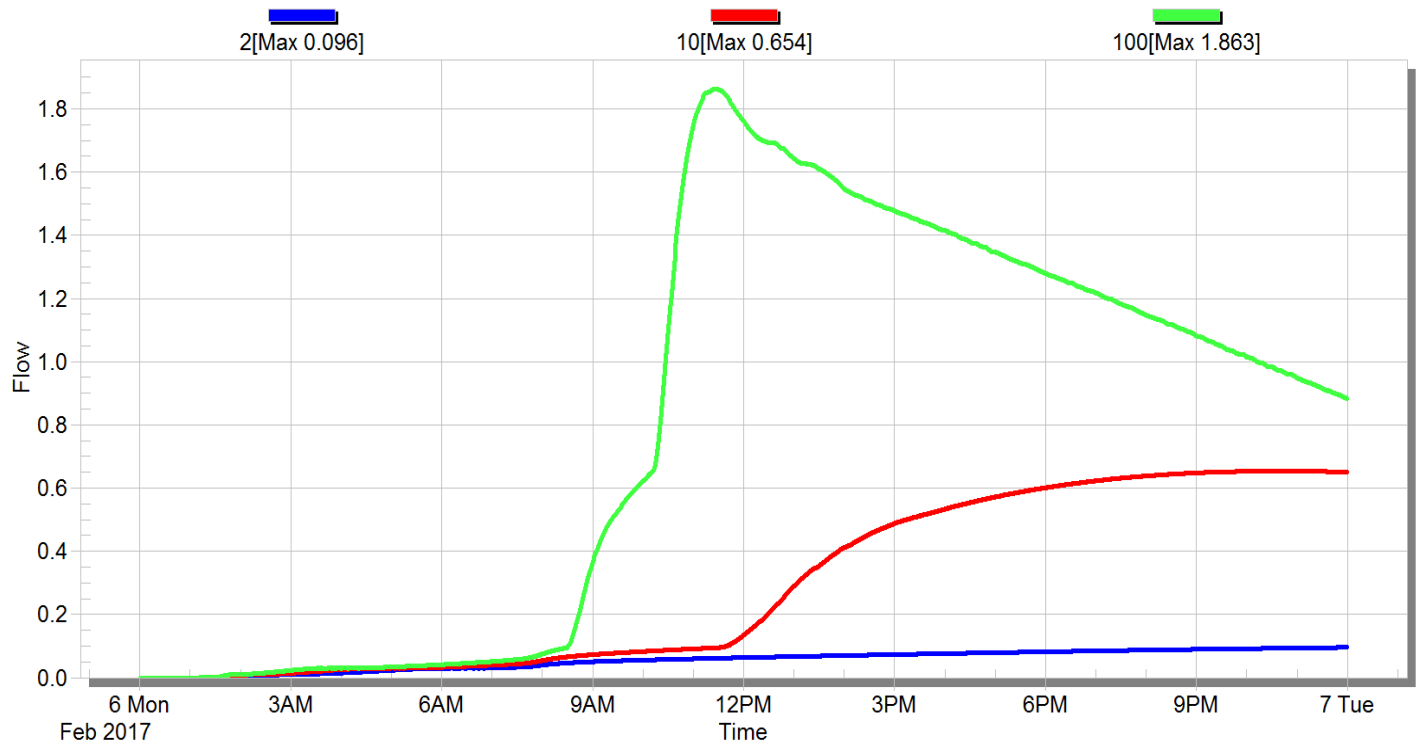
FIGURE 4

BASIN A (NE DETENTION)

PRE-DEVELOPED HYDROGRAPH

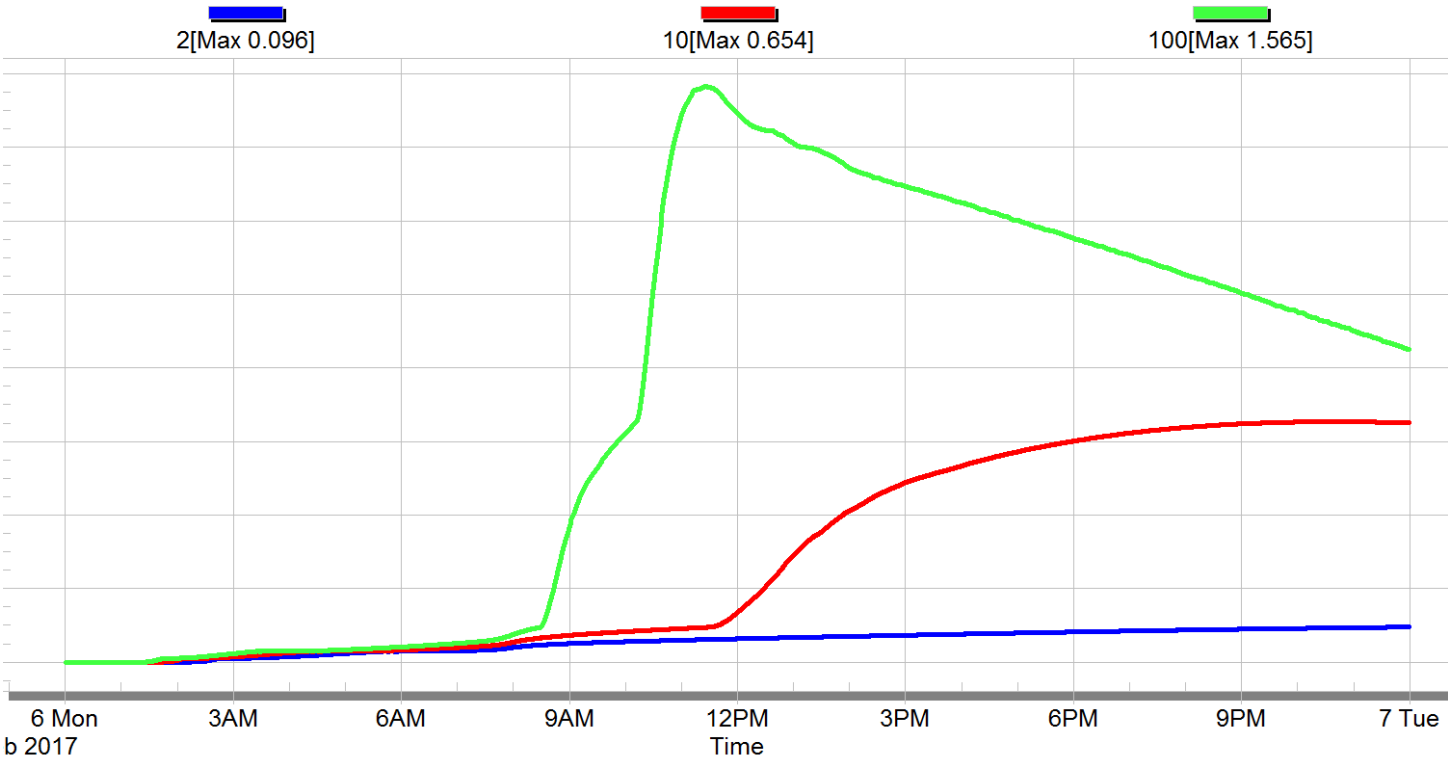


POST-DEVELOPED HYDROGRAPH



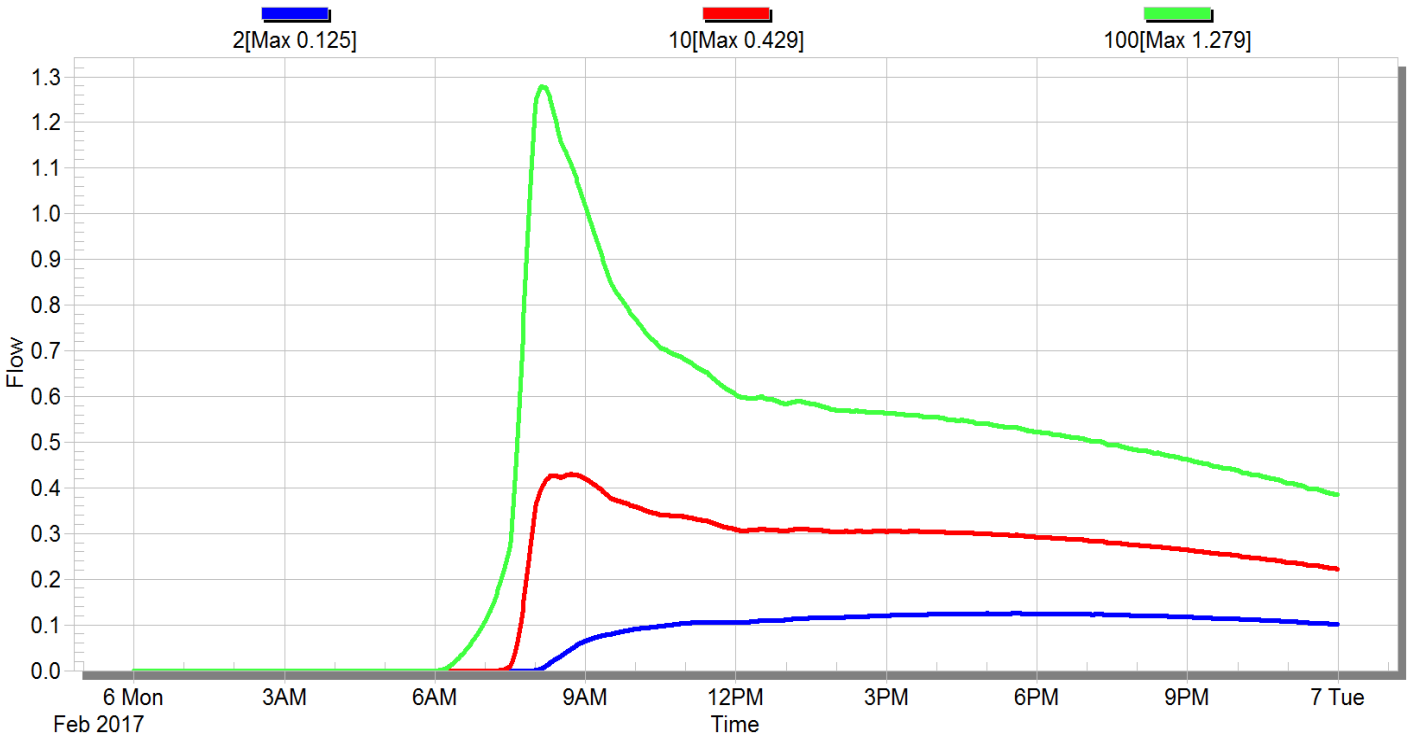
BASIN A (NE DETENTION)

WQ FLOW CONTROL RELEASE

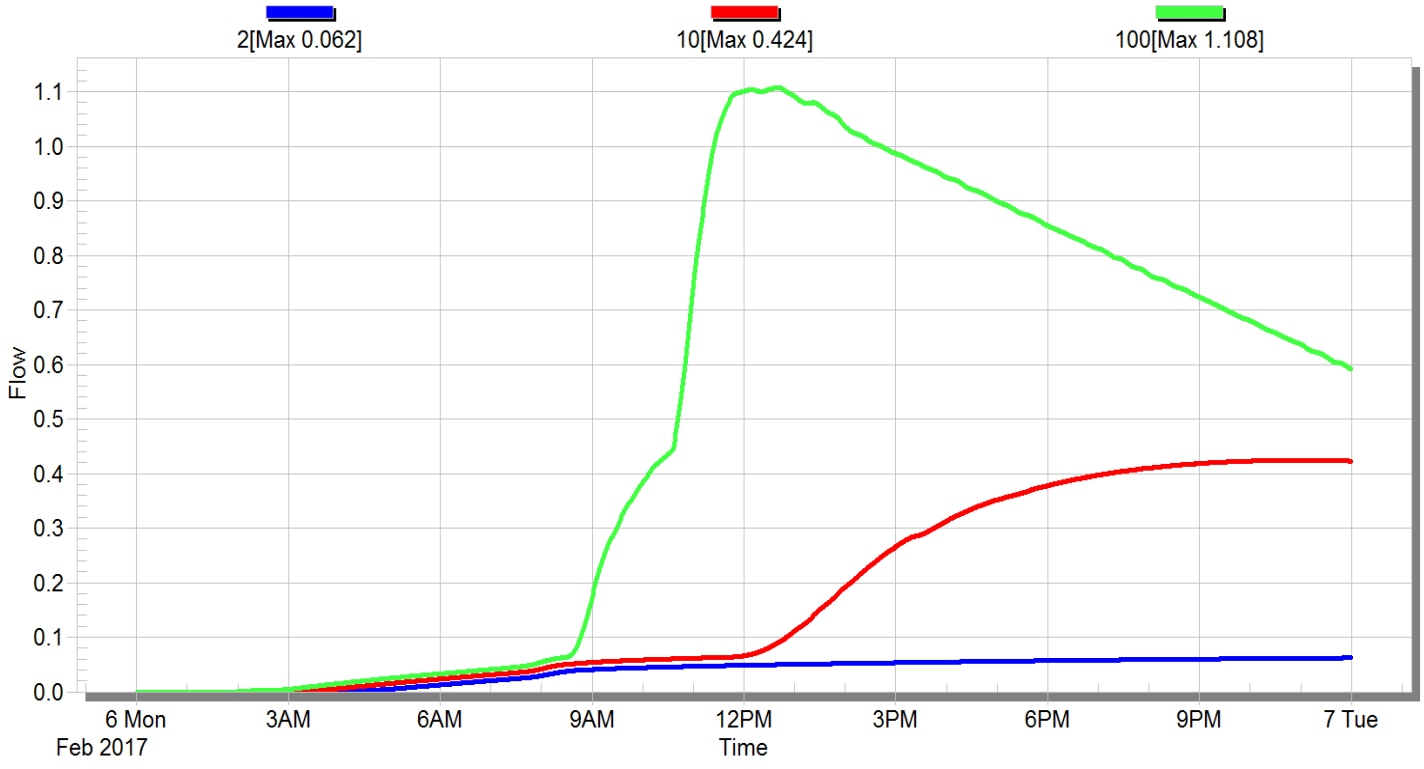


BASIN B (SE DETENTION)

PRE-DEVELOPED HYDROGRAPH

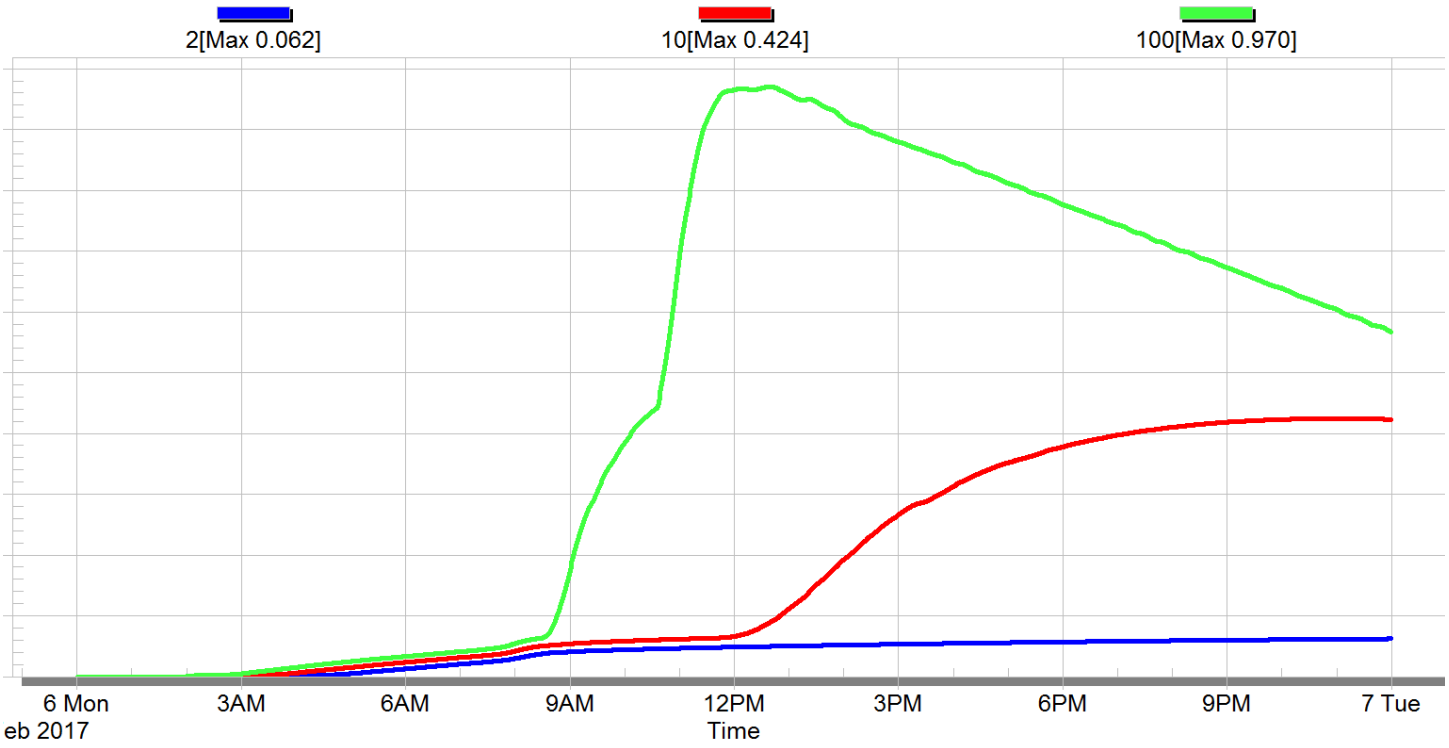


POST-DEVELOPED HYDROGRAPH



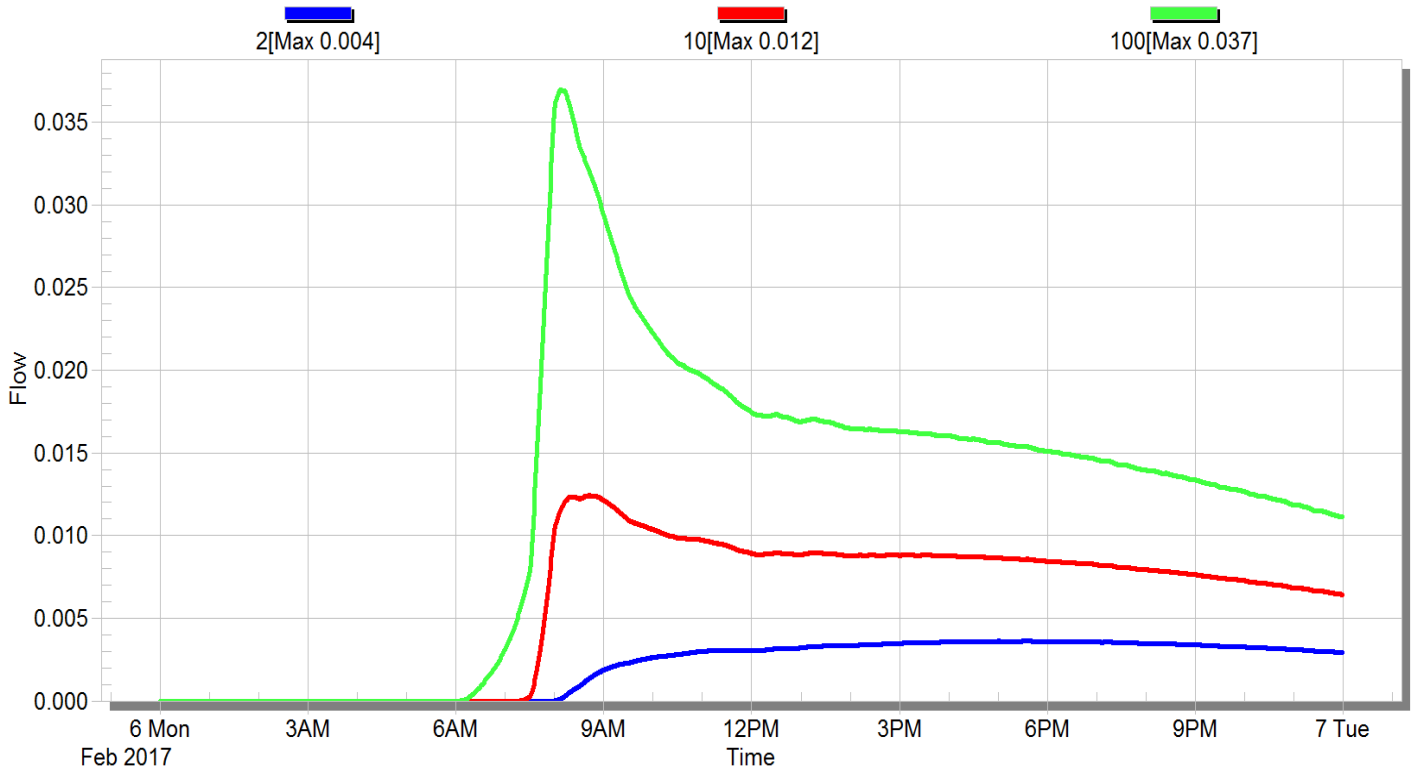
BASIN B (SE DETENTION)

WQ FLOW CONTROL RELEASE

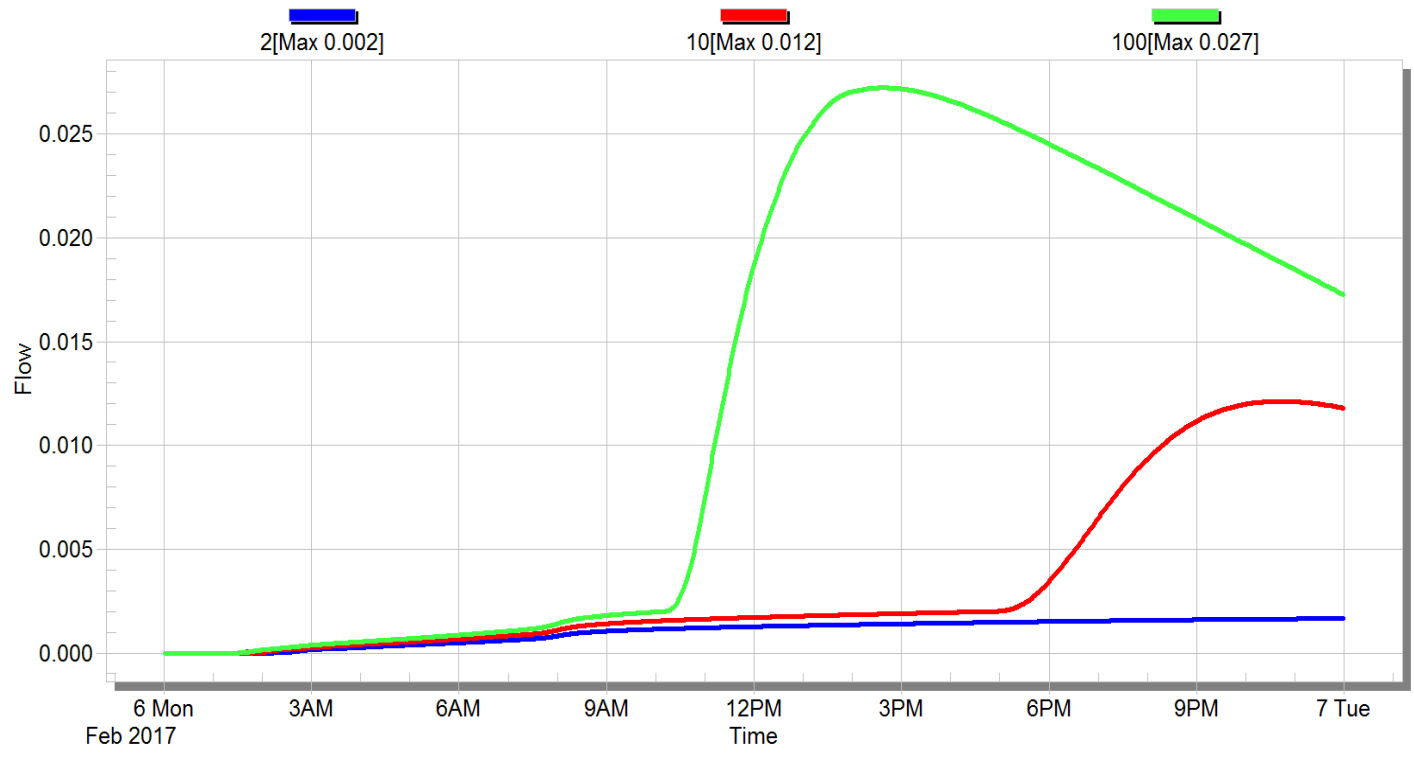


BASIN C (WEST DETENTION)

PRE-DEVELOPED HYDROGRAPH



POST-DEVELOPED HYDROGRAPH



Map Scale: 1:2,490 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 14, Sep 19, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 15, 2015—Jun 23, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
NeB	Nekia silty clay loam, 2 to 7 percent slopes	C	15.7	64.1%
NkC	Nekia stony silty clay loam, 2 to 12 percent slopes	C	3.0	12.4%
SlB	Salkum silty clay loam, basin, 0 to 6 percent slopes	B	5.7	23.4%
Totals for Area of Interest			**24.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Composite Curve Number Calculations

Subject	Costco Salem	By	RHH	Date	11/7/2018
Project	14429				

Runoff Curve Number - Proposed

Soil Name and Hydrologic group	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connect impervious area ratio)	CN				Area acres	Product of CN **X** area
		HSG A	HSG B	HSG C	HSG D		
Basin 1							
B	Open spaces-lawns, parks, golf courses, cemeteries		58			5.00	290
C	Open spaces-lawns, parks, golf courses, cemeteries			72		15.97	1150
				Totals		20.97	1440
				Use CN		69	

$$CN(Weighted) = \frac{Total\_Product}{Total\_Area}$$

		CN For Hydrologic Soil Group			
Cover Description		**A**	**B**	**C**	**D**
Urban Areas	**Source: NRCS TR55 Table 2-2a (1986)**				
	% Impervious				
Open Space					
Poor condition (grass cover <50%		68	79	86	89
Fair condition (grass cover 50% to 70%)		49	69	79	84
Good condition (grass cover >75%) **Amended Soils**		39	61	74	80
City of Salem Pre-development		35	58	72	79
Impervious Areas					
Paved parking lots, roofs, driveways (excluding right-of-way)		98	98	98	98
Streets and roads					
Paved: curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved: open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way) **Un-amended Soils**		72	82	87	89
Urban districts					
Commercial and Business	85	89	92	94	92
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acres or less (town houses)	65	77	85	90	92
¼ acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
½ acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Agricultural Lands	**Source: NRCS TR55 Table 2-2c (1986)**				
	Hydrologic Condition				
Pasture, grassland, or range- combined forage for grazing					
<50% ground cover or heavily grazed with no mulch	Poor	68	79	86	89
50 to 75% ground cover and not heavily grazed	Fair	49	69	79	84
>75% ground cover and lightly or only occasionally grazed	Good	39	61	74	80
Meadow- continuous grass, protected from grazing and generally mowed for hay		30	58	71	78
Brush- weed/ grass mixture with brush as the major element					

		CN For Hydrologic Soil Group			
Cover Description		**A**	**B**	**C**	**D**
<50% Ground cover	Poor	48	67	77	83
50 to 75% ground cover	Fair	35	56	70	77
>75% ground cover	Good	30	48	65	73
Woods/ grass combination (orchard or tree farm)	Poor	57	73	82	86
	Fair	43	65	76	80
	Good	32	58	72	79
Woods					
Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning	Poor	45	66	77	83
Woods are grazed but not burned, and some forest litter covers the soil	Fair	36	60	73	79
Woods are protected from grazing and litter and brush adequately covers the soil	Good	30	55	70	77
Impervious Surface Reduction Facilities	**Source: Portland Stormwater Management Manual (2008)**				
Type	**Hydrologic Condition**				
Pervious Pavement		76	85	89	n/a
Trees					
New and/or existing evergreen		36	60	73	79
New and/or existing deciduous		36	60	73	79
Green Roof	Good	n/a	61	n/a	n/a
Roof Garden	Good	n/a	48	n/a	n/a
Infiltration and Filtration Planter Box	Good	n/a	48	n/a	n/a
n/a = Not Applicable					

Table 4D-6. Runoff Curve Numbers

4D.5—Santa Barbara Urban Hydrograph (SBUH) Method

The SBUH method is an acceptable hydrograph method for flow control design. It involves a five step process. Methodology for steps one through four is described in Subsection 4D.3—Hydrograph Methods and Subsection 4D.4—Time of Concentration.

Determining runoff using the SBUH method requires the use of a computer model. Inputs to the model include:

(1). Basins Areas in acres.

(2). Precipitation for 24 hour storm events in inches.

(3). Soil Characteristics for CN.

(4). Travel time for basin in minutes.

Time of Concentration

SUBJECT	Costco Salem				
PROJECT NO.	2322.14429.01	**BY**	RHH	**DATE**	11/7/2018

	Basin 1	
SHEET FLOW		
INPUT	**VALUE**	
Surface Description	**Type**	**5**
	Grass (short prairie)	
Manning's "n"	**0.15**	
Flow Length, L (<300 ft)	**250**	ft
2-Yr 24 Hour Rainfall, P_2	**2.2**	in
Land Slope, s	**0.020**	ft/ft
OUTPUT		
Travel Time	0.41	hr
SHALLOW CONCENTRATED FLOW		
INPUT	**VALUE**	
Surface Description	**Unpaved**	
Flow Length, L	**647**	ft
Watercourse Slope*, s	**0.018**	ft/ft
OUTPUT		
Average Velocity, V	2.16	ft/s
Travel Time	0.083	hr
CHANNEL FLOW		
INPUT	**VALUE**	
Cross Sectional Flow Area, a	**0**	ft^2
Wetted Perimeter, P_w	**0**	ft
Channel Slope, s	**0**	ft/ft
Manning's "n"	**0.013**	
Flow Length, L	**0**	ft
OUTPUT		
Average Velocity	0.00	ft/s
Hydraulic Radius, r = a / P_w	0.00	ft
Travel Time	0.00	hr
Watershed or Subarea T_c =	**0.49**	**hr**
Watershed or Subarea T_c =	**30**	**minutes**

Water Quality Swale

SUBJECT	Costco Salem - North Swale				
PROJECT NO.	14429.1	**BY**	KDL	**DATE**	11/7/2018
		CHECKED	RHH	**DATE**	11/7/2018

Swale Characteristics:			
Input	**Description**		**Value**
V	Max Velocity		**0.9** ft/s
A	Impervious area		**415,749** ft^2
S	Slope of channel (0.005 ft/ft minimum)		**0.016** ft/ft
Y	Assumed water depth to begin analysis (0.5 ft max)		**0.33** ft
n	Roughness factor	**1** Grass	**0.25**
B	Swale width at base		**21** ft
Z	Side Slopes		**3** H:1V
t	Minimum treatment time (min)		**9.0** min
Water Quality Flow			
Output	**Description**		**Value**
vol	Water quality volume		**NA** ft^3
Q	Flow		**1.56** cfs
Y	Depth of water		**0.25** ft
W	Width of water surface in swale		**22.48** ft
V	Velocity		**0.29** ft/s
L	Length of swale		**188.3** ft

Water Quality Swale

SUBJECT	Costco Salem - South Swale				
PROJECT NO.	14429.1	**BY**	KDL	**DATE**	11/7/2018
		CHECKED	RHH	**DATE**	11/7/2018

Swale Characteristics:			
Input	**Description**		**Value**
V	Max Velocity		**0.9** ft/s
A	Impervious area		**295,400** ft^2
S	Slope of channel (0.005 ft/ft minimum)		**0.015** ft/ft
Y	Assumed water depth to begin analysis (0.5 ft max)		**0.33** ft
n	Roughness factor	**1** Grass	**0.25**
B	Swale width at base		**15** ft
Z	Side Slopes		**3** H:1V
t	Minimum treatment time (min)		**9.0** min
Water Quality Flow			
Output	**Description**		**Value**
vol	Water quality volume		**NA** ft^3
Q	Flow		**0.96** cfs
Y	Depth of water		**0.23** ft
W	Width of water surface in swale		**16.38** ft
V	Velocity		**0.27** ft/s
L	Length of swale		**179.2** ft

Geotechnical Engineering Report

Costco Warehouse – CW# 17-0460
Kuebler Boulevard and 27th Avenue
Salem, Oregon
April 16, 2018
Terracon Project No. 82175107

Prepared for:
Costco Wholesale
Issaquah, Washington

Prepared by:
Terracon Consultants, Inc.
Mountlake Terrace, Washington

April 16, 2018

Terracon

Costco Wholesale
999 Lake Drive
Issaquah, Washington 98027
Attn: Mr. Peter Kahn
425.313.6052
pkahn@costco.com

Re: Geotechnical Engineering Report
Costco Warehouse – CW# 17-0406
Kuebler Boulevard and 27th Avenue
Salem, Oregon
Terracon Project No: 82175107

Dear Peter:

Terracon Consultants, Inc. (Terracon) has performed geotechnical engineering services for the referenced Costco Wholesale – Salem, Oregon project site. These services were conducted in general accordance with Terracon's Proposal No. PT9175002 dated November 8, 2017, Contract Amendment No. 1 dated December 22, 2018, and Contract Amendment No. 2 dated January 30, 2018. Services currently being performed under Contract Amendment No. 3, will be provided under separate cover.

This geotechnical engineering report presents the results of our subsurface explorations and provides geotechnical recommendations for project design and construction.

We appreciate the opportunity to be of service to you on this project. Please contact us if you have any questions concerning this report, or if we may be of further service.

Sincerely,
Terracon Consultants, Inc.

Tori Hesedahl, PE
Senior Staff Geotechnical Engineer

Tori Hesedahl FOR
James M. Schmidt, P.E., D.GE.
Vice President

Kristopher T. Hauck, PE
Principal

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EXECUTIVE SUMMARY

Project Information

A geotechnical study has been performed for the Costco Warehouse CW# 17-0460 project site located in Salem, Oregon at the southwest corner of Keubler Boulevard and 27th Avenue. Terracon's geotechnical study was performed in general accordance with the 2016 Costco Wholesale Development Requirements (CWDR).

The site is presently undeveloped with grass groundcover and a pocket of trees in the southwest corner of the site. Based on the available topographic survey, elevations at the site range from about 370 feet in the west portion of the site to about 340 feet at the northeast corner of the site. The center of the site generally slopes gently down toward the east. The north, east, and south margins of the site slope down from the central portion of the site to roadway grade.

Project information provided to us included a green ink grading plan from DOWL dated March 16, 2018, and Concept Site Plan DD11-27 dated April 11, 2018 from MG2. The site plan indicates an approximately 160,000 square foot (Master Footprint) Costco Wholesale warehouse with an integral receiving dock. We understand the warehouse will be a single-story, steel-framed and concrete masonry unit (CMU) structure, approximately 30 feet tall, with a concrete slab-on-grade floor system. A fuel facility is planned in the northeast portion of the site. We anticipate the fuel facility will consist of three 30,000-gallon underground storage tanks, fuel dispensers, and a pre-manufactured metal canopy. Paved parking/landscaping areas are planned on the majority of the site north and east of the proposed warehouse.

Subsurface Conditions

Terracon's geotechnical scope of services included advancing sixty-one (61) soil test borings to approximate depths of about 10 to 44 feet below existing site grades. We also conducted nine (9) test pit excavations at selected locations.

The Oregon Department of Geology and Mineral Industries (DOGAMI) published geologic information in an interactive map available online at *http://www.oregongeology.org/geologicmap/ (2009).* DOGAMI indicates the site is classified as basalt from the Grande Ronde Basalt formation. We believe soil encountered during our investigation generally agrees with mapped deposit conditions in varying degrees of decomposition.

Sandstone encountered in test pits (TP) TP-4 and TP-5 does not match the mapped description. The sandstone encountered matches the description for the next older unit, Eocene-Oligocene sedimentary rock. The nearest mapped exposure is approximately 5 miles to the west at about the same elevation as that encountered at the site. The test pits were terminated in the sandstone

so it is unknown whether this is a boulder or bedrock exposure. Based on observations, it is our opinion that this is likely a former sandstone hill top that was subsequently filled around and perhaps over by the Grande Ronde flood basalt.

The boundary between soil and rock is typically not sharply defined. A transitional zone termed "partially weathered rock" is normally found overlying bedrock. Partially weathered rock (PWR) is defined for engineering purposes as residual material with a standard penetration resistance exceeding 100 blows per foot (bpf).

The soil borings, and test pits indicate that subsurface conditions at the project site generally consist of silt or clay with varying proportion of sand and gravel. Topsoil thickness ranged from 0 to 36 inches across the site. Topsoil, PWR materials, and auger refusal materials (apparent rock) were encountered in 17 of the explorations. Residual soil ranged from loose to very dense in relative density and medium stiff to hard in consistency. Cobbles and boulders (up to 10 feet in diameter) were observed scattered over the ground surface, in discrete piles on the site, and partially exposed at ground surface. Cobbles and boulders were also logged in 12 of the explorations at locations scattered across the site, and at varying depts. Shallow auger refusals may be indicative of cobbles, boulders, or bedrock.

Conditions varied considerably across the site. Some notable exceptions to typical conditions are described.

- Very soft to soft clay and silt were encountered in boring F-3 at approximately 10 feet below existing ground surface (bgs). Soft silt was also encountered at approximately 2 ½ feet bgs in boring B-14.
- Cobbles and boulders were observed in Sandstone was encountered in test pits TP-4 and TP-5. A rubber-tired backhoe excavated these test pits from about 3 feet to the planned termination depth of 10 feet bgs.
- Existing, undocumented fill was observed in 21 of the explorations. Depth to bottom of the fill layer, where encountered, varied from ½ to 20 feet bgs. Borings with fill depths of up to 1 ½ feet bgs were scattered across the site. Two areas were observed to have fill depths greater than 1 ½ feet – the northwest corner in the vicinity of the fueling station and the south-central portion of the site under the east wall of the warehouse.
- Relic topsoil was encountered sporadically across the site underlying the undocumented fill. Soft fill soils with a thick remnant topsoil layer was encountered at the northeast corner of the building (boring B-4) to a depth of about 4 feet bgs and 8 feet below finished floor elevation.

Groundwater data from the VWPs indicate that level varies with precipitation on the site. The range of levels recorded at F-4 is from approximately elevation 341 feet to 346 feet. At W-6 the range of recorded values was from approximately elevation 338 to 351 feet. Occurrences of peaks and troughs in the data did not occur at the same time. The variation in levels and times at which extreme levels occurred

between the two piezometers indicates a complex groundwater regime which cannot be fully characterized by the available information. Observations from other explorations across the site also indicated that areas of perched water closer to ground surface are present, especially within the fill soils and/or where less weathered rock was encountered shallower to the surface.

Geotechnical Issues

The following geotechnical considerations were identified:

- the presence of cobbles, boulders, and zones of PWR
- total and differential settlement due to soft to stiff fine grained soil near footing elevations
- moisture sensitive soil
- existing fill
- groundwater elevation
- differing subgrade support due to site grading

Summary of Recommendations

- Site preparation should include stripping of existing topsoil and root mat, including complete removal of stumps/root systems of trees in the proposed warehouse and pavement areas. The stripped topsoil should not be used as structural fill.

- The near-surface soil encountered in the subsurface explorations across the site are moisture sensitive. As such, they are subject to softening and loss of support when they are wet. We recommend that site preparation and earthwork be performed between June and October when more favorable drying conditions typically occur, and rain events occur over shorter time periods. If mass grading is conducted outside of this timeframe, our recommendations should be revisited to account for mitigation of conditions associated with wet subgrade soil. A budget provision for cement treatment stabilization of the warehouse and pavement areas could be considered if site development is planned between late fall and early summer due to the moisture sensitivity of these materials.

- Costco's contractor should be prepared to deal with large boulders at the surface and buried below the ground surface. Boulder sizes visible at ground surface ranged from approximately basketball sized, to the size of a small automobile in the largest dimension. Single boulders were scattered across the site and there were several piles of boulders. Partially buried boulders were visible at ground surface. Heavy earthmoving equipment is anticipated to be necessary. It may be necessary to rip weathered and jointed sandstone over limited area.

- Shallow foundations are recommended for the proposed structures. The foundations should bear on at least a 2-foot thickness of properly placed and compacted select structural fill consisting of dense-graded aggregate base that extends at least 24 inches beyond the edge of the footing on all sides and is placed above stiff or better silt to lean clay. Thickness of select structural fill should be increased to 3 feet at the northeast and southeast corner of the warehouse, as shown on Exhibit A-7, due to existing undocumented fill. Extents of removal and replacement should correspondingly increase to 3 feet beyond the edge of footing on all sides.

- Support of footings, floor slabs, and pavements on or above existing fill soils is discussed in this report. However, even with the recommended construction testing services, there is an inherent risk for the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill, but can be reduced by performing additional testing and evaluation.

- Based on the results of the soil borings and the 2014 Oregon Structural Specialty Code, it is our opinion that a seismic Site Class D is appropriate for the site. We consider the risk of liquefaction, lateral spread, and ground rupture at the site to be low.

- Scarify, moisture condition, and recompact subgrade soil across the site (warehouse, fuel facility, and parking lot) to a minimum depth of 12 inches below subgrade.

- Based on the geotechnical characteristics of this site, the proposed Costco structure may be built with a non-reinforced slab-on-grade floor. It should be noted that the subgrade and base course materials are not designed to hold up to construction equipment (such as scrapers and haul trucks). Consequently, construction equipment may degrade the subgrade during placement. It is the contractor's responsibility to maintain the integrity of the subgrade during construction activities.

- Terracon typically recommends installation of a vapor barrier beneath the slab to mitigate potential moisture issues such as flooring performance and mold. However, we understand that Costco Wholesale has determined that moisture barriers are not to be used in construction of Costco Wholesale structures because of adverse effects on concrete curing and performance. Therefore, we have provided construction recommendations that do not include installation of a moisture barrier, with the understanding that there will be an increased risk for adverse moisture issues.

- It is our opinion that the on-site soil has a moderate corrosive potential to uncoated metal pipes.

- We recommend the use of Type I/II cement in concrete that will be in contact with the soil.

- It is Terracon's opinion that stormwater infiltration is not feasible at the proposed locations and elevations based on the groundwater level observations discussed in this section. We understand that the City of Salem has relaxed its requirements for stormwater infiltration on this site and that stormwater management will be accomplished with bio-swales with overflows connected to the storm sewer. Bottom elevation of the planned swales is 346 feet.

- Based on the available information, our opinion is that groundwater intrusion into the swales may be expected in the wet season. Furthermore, seepage may be expected from permanent cut slopes during the wet season which could cause sloughing depending on slope protection. Vegetation and rip rap are examples of measures that could be used to mitigate surficial sloughing

- Luminaire pole foundations should be designed using an allowable lateral bearing capacity of 200 pounds per square foot (psf) per foot of embedment.

- Select structural fill materials recommended in the Foundations, Floor Slabs, and Pavements sections should meet the requirements of the Oregon Department of Transportation 2018 Standard Specifications for Construction listed in the table below:

Fill Type [1]	OSSC 2018 Paragraph[3]	Acceptable Location for Placement
Dense-Graded Aggregate¾"-0 [2]	02630.10	Minimum 24-inch thickness below footings, except where it increases to 36-inches at NE and SE corners

1. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation.
2. During periods of wet weather, fines content should be limited to no more than 5 percent per our recommendations in the Wet Weather Earthwork section.
3. Oregon Standard Specification for Construction 2018, published by the Oregon State Department of Transportation

A summary of recommended pavement thicknesses is provided in the following tables.

Exterior Pavements			
Pavement Type	Material	Layer Thickness (inches)	
		Standard Duty / Fuel Center	Heavy Duty
Rigid	Portland Cement Concrete (4,000 psi)	9	9

	Aggregate Base Course	4	4
Flexible	Asphalt Surface Course 50-blow Marshall Mix / No Recycled Asphalt / Binder Grade PG 58-16	2 [1]	2 [1]
	Asphalt Base Course 50-blow Marshall Mix / Binder Grade PG 58-16	2	3
	Aggregate Base Course	6	10

1. Asphalt surface course minimum thickness of 1-3/4 inches in accordance with Costco "Asphalt Paving" specification, Section 321216, Part 1.2.C.
2. The Costco "Asphalt Paving" specification, Section 321216, Part 1.2.E allows use of pavement mix with 1-inch maximum aggregate size (MAS). The recommended Light Duty Asphalt Base Course thickness is thinner than 3 times the nominal maximum aggregate size for the 1-inch MAS mix. The 1-inch MAS mix should not be used for the Light Duty Asphalt Base Course.

- Terracon should be retained during the site grading phase of the project to observe earthwork and to perform the necessary testing and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, and backfilling of excavations to the completed subgrade.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that 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** in the report should be read for an understanding of the report limitations.

GEOTECHNICAL ENGINEERING REPORT
COSTCO WAREHOUSE – CW# 17-0460
KUEBLER BOULEVARD AND 27TH AVENUE SE
SALEM, OREGON 97302

Terracon Project No. 82175107
April 16, 2018

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the proposed Costco Wholesale warehouse to be located on Kuebler Boulevard in Salem, Oregon.

Terracon's geotechnical scope of services included advancing sixty-one (61) soil test borings to approximate depths of about 10 to 44 feet below existing site grades. We also conducted nine (9) test pit excavations at selected locations. The exploration locations are shown on the Site and Exploration Plan, Exhibit A-2, in Appendix A. Boring and Test Pit Logs are also presented in Appendix A.

The purpose of these services was to provide information and geotechnical engineering recommendations outlined in the Costco Wholesale Development Requirements, including, but not limited to:

- Subsurface soil conditions
- Earthwork construction
- Pavement design and construction
- Below-grade/retaining walls
- Stormwater infiltration
- Groundwater conditions
- Foundation design and construction
- Floor slab design and construction
- Seismic considerations
- Soil Corrosivity

2.0 PROJECT INFORMATION

2.1 Project Description

Project information provided to us included a green ink grading plan from DOWL dated March 16, 2018, and Concept Site Plan DD11-27 dated April 11, 2018 from MG2.

TEM	DESCRIPTION
Proposed construction	The site plan indicates an approximately 160,000 square foot (Master Footprint) Costco Wholesale warehouse with an integral receiving dock. A fuel facility is planned in the northeast portion of the site. Paved parking/landscaping areas are planned on the majority of the site north and east of the proposed warehouse.
Warehouse construction	We understand the warehouse will be a single-story, steel-framed and concrete masonry unit (CMU) structure approximately 30 feet tall with a concrete slab-on-grade floor system. We anticipate the fuel facility will contain three 30,000-gallon underground storage tanks, fuel dispensers, and a pre-manufactured metal canopy.
Maximum loads	The current Costco Wholesale Development Requirements (Version 2016) indicate the following structural loading conditions are generally applicable for the project: ■ Typical wall loading: 4.5 kips/foot (CMU or precast) ■ Typical column loading: 150 kips (snow regions ■ Typical canopy loading: 50 kips ■ Typical floor slab loading: 500 lbs/sq. foot (total), 350 lbs/sq. foot (live)
Maximum allowable settlement	Warehouse / Fuel Facility / Fuel Tanks Total: 1-inch Differential: ½ inch over 50 feet
Site plans	A preliminary layout plan and topographic site plan were provided to us. Preliminary grading information indicates that cuts and fills will be on the order of 5 to 10 feet or less.
Finish floor elevation	EL 365 feet (preliminary information)
Cut and fill slopes	Typical slope configurations for the area are 3H:1V (Horizontal to Vertical).

TEM	DESCRIPTION
Retaining walls	■ Low-height retaining walls are anticipated at loading docks. ■ An ecology block gravity wall with maximum retained height of approximately 11 feet is planned between the fueling station and the existing stormwater facility at the north east corner of the site. ■ A group of 4 retaining walls along the south side of the site, two of these have retained heights less than 4 feet, one with retained height of approximately 5.3 feet and the other with retained height of approximately 7.1 feet.
Below-grade areas	Buried underground storage tanks are planned for the fuel facility.

2.2 Site Description

ITEM	DESCRIPTION
Location	The site is located at the southeast corner of Kuebler Boulevard and 27th Avenue SE in Salem, Oregon. The property is located approximately 0.5 miles west of I-5. It is bound by Kuebler Boulevard on the north, 27th Avenue SE on the east, Boone Road SE on the south, and by developed land to the west. See the Site Location Plan in Appendix A.
Existing improvements	The site is currently undeveloped.
Current ground cover	The site is currently covered mostly by grass with a pocket of trees in the southwest corner of the site.
Existing topography	Based on the available topographic survey, elevations at the site range from about 370 feet in the western portion of the site to about 340 feet at the northeast corner of the site. The center of the site generally slopes gently down toward the east. The north, east, and south margins of the site slope down at between 2H:1V and 3H:1V (Horizontal to Vertical) from the central portion of the site to roadway grade.

Should any of the following information or assumptions be inconsistent with the planned construction, please let us know so that we may make any necessary modifications to our recommendations.

3.0 SUBSURFACE CONDITIONS

A discussion of the subsurface conditions encountered during our subsurface exploration program is presented in the following sections. During the planning stage of this project, we reviewed publicly available information that included subsurface investigations. This opinion is based upon information available in the public domain as well as Terracon's historical records in the vicinity of the project site. A summary of the reviewed information is provided in the following sections.

3.1 Site Geology

The Oregon Department of Geology and Mineral Industries (DOGAMI) published geologic information in an interactive map available online at *http://www.oregongeology.org/geologicmap/ (2009).* DOGAMI indicates the site is classified as basalt from the Grande Ronde Basalt formation. We believe soils encountered during our investigations agree with mapped deposit conditions in varying degrees of decomposition.

Sandstone encountered in test pits TP-4 and TP-5 does not match the mapped description. The sandstone encountered matches the description for the next older unit, Eocene-Oligocene sedimentary rock. The nearest mapped exposure is approximately 5 miles to the west at about the same elevation as that encountered at the site. The test pits were terminated in the sandstone so it is unknown whether this is a boulder or bedrock exposure. Based on observations, it is our opinion that this is likely a former sandstone hill top that was subsequently filled around and perhaps over by the Grande Ronde flood basalt.

The subsurface bedrock in this region has undergone differing rates of weathering. It is also not unusual for zones of partially weathered rock, boulders, and lenses of hard rock and to be present within the soil mantle above the general bedrock level. The typical residual soil profile consists of clayey soils near the surface, where soil weathering is more advanced, underlain by sandy silts and silty sands, which often consist of saprolites (native soils which maintain the original fabric of the parent rock). Generally, the soil becomes harder with depth to the top of parent crystalline rock or "massive bedrock" which occurs at depth.

The boundary between soil and rock is typically not sharply defined. A transitional zone termed "partially weathered rock" is normally found overlying bedrock. Partially weathered rock (PWR) is defined for engineering purposes as residual material with a standard penetration resistance exceeding 100 blows per foot (bpf).

3.1.1 Seismic Hazards

Seismic hazards resulting from earthquake motions can include slope instability, liquefaction, and surface rupture due to faulting or lateral spreading. Liquefaction is the phenomenon wherein soil strength is dramatically reduced when subjected to vibration or shaking.

We reviewed DOGAMI's Hazard Viewer, found online at http://www.oregongeology.org/hazvu/. The viewer categorizes the earthquake liquefaction from low, medium, and high; the expected earthquake shaking from light, moderate, strong, very strong, severe and violent; and the landslide susceptibility from low, moderate, high, and very high.

- Earthquake Liquefaction Hazard: Negligible
- Expected Earthquake Shaking: Strong to Very Strong
- Landslide Susceptibility due to Earthquake: Low to Moderate

The United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States published a report containing descriptions of two nearby faults:

1. The Waldo Hills Fault (No. 872) is located approximately 1.5 miles southeast of the site.

Information	Description
Length	12 km
Average Strike	N45°E
Sense of Movement	Normal
Dip Direction	Northwest
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6Ma)

2. The Salem-Eola Hills Homocline (No. 719) is located approximately 5 miles southwest of the site and curves northward around the site while maintaining approximately the same distance.

Information	Description
Length	32 km
Average Strike	N26°W
Sense of Movement	Homocline
Dip Direction	2-4.5° Northeast
Slip-rate Category	Less than 0.2 mm/yr
Most recent prehistoric deformation	Undifferentiated Quaternary (<1.6Ma)

3.2 USDA Soil Survey

The United States Department of Agriculture Natural Resources Conservation Service has published a series of soil surveys with typical soil properties located within each county of Oregon. The majority of the site is mapped as Nekia Silty Clay Loam, 2 to 7 percent slopes (NeB) with the rest of the site mapped as Nekia Silty Clay Loam, 2 to 12 percent slopes (NeC), and Salkum Silty Clay Loam, 0 to 6 percent slopes (SlB) (see map below). The USDA characterizes the mapped soils as having the following characteristics:

Nekia Silty Clay Loam (NeB, NeC)

Parent Material: Residuum weathered from tuffs and basalt							
Depth (inches)	**USCS Symbols**	**Plasticity Index**	**Corrosion of Concrete**	**Corrosion of Steel**	**pH**	**% Silt & Clay**	**Hydrologic Group**
0 – 9	ML	10 – 15	Moderate	High	5.1 – 6.0	80-90	C
9 - 36	CL/GC	15 – 25				70-80	
36 - 40	Bedrock	N/A			N/A	N/A	N/A

Salkum Silty Clay Loam (SlB)

Parent Material: Residuum weathered from tuffs and basalt							
Depth (inches)	**USCS Symbols**	**Plasticity Index**	**Corrosion of Concrete**	**Corrosion of Steel**	**pH**	**% Silt & Clay**	**Hydrologic Group**
0 – 20	CL	15-20	Moderate	High	5.6-6.5	80-85	B
20 - 40	MH	15-25			4.5-6.0	80-100	
40-65	MH, ML	15-25				80-95	

3.3 Typical Subsurface Profile

The soil borings and test pits indicate that subsurface conditions at the project site generally consist of silt or clay with varying proportion of sand and gravel. Topsoil was generally very thin. PWR material or auger refusal material (apparent rock) were encountered in 25 of the explorations. Residual soil ranges from loose to very dense in relative density and medium stiff to hard in consistency. Cobbles and boulders were observed scattered over the ground surface, in discrete piles on the site, and partially exposed at ground. Cobbles and boulders were also logged in 12 of the explorations at locations scattered across the site, and at varying depts. Shallow auger refusals may be indicative of cobbles, boulders, or bedrock.

Based on the results of the borings, subsurface conditions in the can be generalized as follows:

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 1	0 to 36 inches, typically less than 6 inches	Topsoil	Medium stiff to stiff
Stratum 2	0 to 20 feet	Existing Fill – Silty Sands (SM) and Sandy Silts (ML)	Loose to Medium Dense (SM) Soft to Stiff (ML)

Description	Approximate Depth to Bottom of Stratum (feet)	Material Encountered	Consistency/Density
Stratum 3	0 to greater than 20 feet	Residual Soil – Silty Sands (SM) and Sandy Silts (ML)	Medium Dense to Very Dense (SM) Stiff to Very Stiff (ML)
Stratum 4	18 to 40 feet	Partially Weathered Rock (PWR)	Very Dense/Hard
Stratum 5	1 to 44	Auger Refusal (Apparent Rock)	-

Conditions varied considerably across the site. Some notable exceptions to typical conditions are described.

- Very soft to soft clay and silt were encountered in boring F-3 at approximately 10 feet below existing ground surface (bgs)) and in boring W-7 from approximately 25 to 26 ½ feet. Soft silt was also encountered at approximately 2 ½ feet bgs in boring B-14.
- Cobbles and boulders were observed in Sandstone was encountered in test pits (TP) TP-4 and TP-5. A rubber-tired backhoe excavated these test pits from about 3 feet to the planned termination depth of 10 feet bgs.
- Existing, undocumented fill was observed in 37 of the explorations. Depth to bottom of the fill layer, where encountered, varied from ½ to 20 feet bgs. Borings with fill depths of up to 1 ½ feet bgs were scattered across the site. Two areas were observed to have fill depths greater than 1 ½ feet – the northwest corner in the vicinity of the fueling station and the south-central portion of the site under the east wall of the warehouse.
- Relic topsoil was encountered sporadically across the site underlying the undocumented fill. Soft fill soils with a thick remnant topsoil layer was encountered at the northeast corner of the building (boring B-4) to a depth of about 4 feet bgs and 8 feet below finished floor elevation.

Approximate depths to PWR and to auger refusal are presented in the following table:

Boring	Approximate Depth to PWR (feet)	Approximate Depth to Auger Refusal – Apparent Rock (feet)
B-1a	33	4
B-2	20	>20
B-3	20	>20
B-4	20	>21
B-6a	NOB	1

Boring	Approximate Depth to PWR (feet)	Approximate Depth to Auger Refusal – Apparent Rock (feet)
B-7	17	>20
B-8	17	17.4
B-9a	15	15.4
B-9b	17	17.1
B-10	20	>20
B-11	20	>20
B-12	10	12.1
B-15	40	44.1
F-4	40	>41.5
P-1	10	>10
P-2a	NOB	1.5
P-2b	5	5.9
P-3	9	>10
IT-1A	NOB	6
IT-1B	NOB	10.2
IT-1C	NOB	11.5
W-2A	NOB	6.5
W-2B	NOB	8.6
W-3A	NOB	2.75
W-3B	NOB	16.5

NOB – Not Observed

Conditions encountered in the subsurface explorations are described on the boring and test pit logs in Appendix A of this report. Stratification boundaries on the logs represent the approximate locations of changes in soil types; in-situ, the transition between materials may be gradual. It is possible that shallow PWR and rock may be encountered at locations between the borings and test pits conducted at the site.

3.4 Groundwater

The boreholes and test pits were observed while drilling/excavation and after completion for the presence and level of groundwater. Vibrating wire piezometers (VWP) were installed in borings F-4 and W-6 to measure water level at these locations. Water levels were recorded with a data logger. Data collected from the VWPs is presented on plots included in Appendix A. The water levels observed in the boreholes can be found on the boring logs in Appendix A, and are summarized below.

Boring Number[1]	Approximate Depth to Groundwater while Drilling (feet) [2]	Approximate Depth to Groundwater after Drilling (feet) [2]
B-2	20	N/A (Cave in at 2.6ft)
B-3	20	7.0 (0 hr. reading)
B-4	20	6.7 (0 hr. reading)
B-6b	15	N/A (Cave in at 4.6ft)
B-8	10	N/A
B-9a	N/A	6.7 (24 hr. reading)
B-9b	N/A	10.1 (24 hr. reading)
B-10	20	N/A (Cave in at 8.7ft)
B-13	21	N/A
B-16	15	7.1 (0 hr. reading)
B-17	15	7.6 (0 hr. reading)
B-18	N/A	6.8 (1.5 hr. reading)
B-19	15	6.6 (0 hr. reading)
B-20	15	5.5 (0 hr. reading)
B-21	7.5	5.8 (0 hr. reading)
F-3	20	8.8 (0 hr. reading)
F-4	20	11.0 (11/28/2017)
F-5	15	N/A
F-6	14	N/A
F-7	16	N/A
IT-1A	5	4
IT-1B	9	7
IT-1C	8	6
IT-2	12	12
W-1	25	N/A
W-4	18	14
W-5	11	N/A
W-6	11	12.1 (3/27/2018)
W-7	6	N/A
W-8	16	N/A
TP-1	Seepage observed at 8’	N/A
TP-3	Seepage observed at 9.5’	N/A
TP-6	Seepage observed at 1.5’	N/A
TP-7	Seepage observed at 2’	N/A

Boring Number[1]	Approximate Depth to Groundwater while Drilling (feet) [2]	Approximate Depth to Groundwater after Drilling (feet) [2]
TP-8	Seepage observed at 8.5’	N/A
TP-9	Seepage observed at 9’	N/A

1. Borings not listed did not encounter water during drilling and/or were not monitored afterward
2. Below ground surface.

Groundwater data from the VWPs indicate that level varies with precipitation on the site. The range of levels recorded at F-4 is from approximately elevation 341 feet to 346 feet. At W-6 the range of recorded values was from approximately elevation 338 to 351 feet. Occurrences of peaks and troughs in the data did not occur at the same time. The variation in levels and times at which extreme levels occurred between the two piezometers indicates a complex groundwater regime which cannot be fully characterized by the available information.

Observations from other explorations across the site also indicated that areas of perched water closer to ground surface are present, especially within the fill soils and/or where less weathered rock was encountered shallower to the surface.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. The period of time over which groundwater levels were recorded is insufficient to characterize seasonal variation. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

3.5 Laboratory Testing

As outlined in the Costco’s site development criteria and based on our experience, the following analytical laboratory testing was performed by Terracon and independent analytical laboratories.

- Moisture content
- Plastic limit/liquid limit
- Particle size distribution
- Soil resistivity, soil pH, sulfates/chlorides
- Modified Proctor testing
- California Bearing Ratio
- Topsoil analysis

The results of the laboratory testing are presented on the individual boring logs and in Appendix B. Soil samples will be stored for a period 12 months following completion of our report, or until the completion of construction.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The primary considerations for site development are:

- the presence of cobbles, boulders, and zones of PWR
- total and differential settlement due to soft to stiff fine grained soil near footing elevations
- moisture sensitive soil
- existing fill
- groundwater elevation
- differing subgrade support due to site grading

Support of footings, floor slabs, and pavements on or above existing fill soils is discussed in this report. However, even with the recommended construction testing services, there is an inherent risk for the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill, but can be reduced by performing additional testing and evaluation.

Auger refusal on apparent rock near finish floor elevation occurred at borings B-1 and B-6. Sandstone was encountered in test pits TP-4 and TP-5. These explorations are located near the northwest corner of the warehouse. Boulders ranging from approximately basketball sized, to the size of a small automobile were visible at ground surface to our exploration team. Cobbles and boulders were logged in 12 of our explorations. Contractors should be prepared to deal with automobile sized boulders. Partially buried boulders were visible at ground surface. It is possible boulders larger than those observed are present on the site. Heavy earthmoving equipment is anticipated to be necessary. It may be necessary to rip sandstone over limited area. It is possible that shallow PWR and rock may be encountered at locations other than those disclosed by the explorations at the site.

Residual soil at the site is moisture sensitive and will lose strength and stability and will become difficult to adequately compact as their moisture content increases. Performing site earthwork

between June and October will reduce the potential for earthwork problems associated with wet soils.

Performing site preparation and earthwork at other times of the year increases the potential for having to perform remedial work on the subgrade soils. Construction traffic over wet subgrades should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades. If the subgrade should become, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and re-compacted. The use of lime treatment generally reduces the plasticity of clays and silts, makes them less susceptible to moisture fluctuations, and may make them more workable during wetter periods of the year.

In our opinion, the existing fill, and native soil at the site are suitable for support of shallow foundations, floor slabs, and pavements. Shallow foundations bearing on at least 2 feet of select structural fill over approved subgrade soil can be designed based on a soil bearing capacity of 3,000 pounds per square foot (psf). Due to the depth and consistency/density of existing fill soil observed in the borings, areas in the northeast and southeast corners of the building should be supported on at least 3 feet of select structural fill. We recommend scarifying, moisture conditioning, and re-compacting the upper 1-foot of native soil below floor slabs, sidewalks, and pavements prior to placing base course or structural fill. If subgrades are to be prepared outside of the season window described above (June to October), scarifying and compacting may be unfeasible. Therefore, removal and replacement with select fill may be necessary and should be evaluated at the time of construction.

Terracon should review the final grading plan so that we may make modifications to our recommendations as necessary.

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation; proof-rolling; placement and compaction of controlled compacted fills; backfilling of excavations to the completed subgrade.

Geotechnical engineering recommendations for foundation systems and other earth-related phases of the project are outlined below. The recommendations contained in this report are based upon the results of data presented herein, 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 structural 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 personnel. The evaluation of earthwork should include observation and testing of structural fill, subgrade preparation, ground improvement and other geotechnical conditions encountered during the construction of the project.

4.2.1 Site Preparation

Site preparation should begin by removing the existing vegetation from the site. After the existing vegetation is removed, the site should be grubbed and the topsoil stripped and stockpiled for use in re-vegetating landscape areas or disposed of off-site. Topsoil depth observed in the explorations varied between 0 and 3 feet, but depths of 6 inches or less are anticipated for the majority of the site. Deeper stripping and grubbing depths may be required to completely remove the roots of trees however.

After site stripping, we recommend scarification, moisture conditioning, and recompaction of the entire site. Following recompaction, the site should be proof-rolled. Proof-rolling should be performed with a loaded, tandem-axle dump truck or similar rubber-tired construction equipment with a minimum gross weight of 20,000 lb. The proof-rolling operations should be observed by a representative of the geotechnical engineer and should be performed after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade and to reduce the amount of remedial work required.

If the exposed soil surface exhibits excessive deflection, pumping, or rutting under the proof-rolling operation, we recommend over-excavation of soft/unstable soil and replacement with structural fill. The extent to which over-excavation and replacement will be required will likely be reduced if the site preparation and earthwork are performed during warmer and drier periods of the year.

4.2.2 Subgrade Stabilization

Based on the outcome of the proof-rolling operations, some undercutting or subgrade stabilization may be expected, especially during wet periods of the year. Methods of stabilization, which are outlined below, could include scarification and re-compaction and/or removal of unstable materials and replacement with granular fill (with or without geotextiles). The most suitable method of stabilization, if required, will be dependent upon factors such as schedule, weather, size of area to be stabilized and the nature of the instability.

- **Scarification and Re-compaction** - It may be feasible to scarify, dry, and re-compact the exposed granular (existing trench backfill) soils at the site during periods of dry weather. This method should not be planned for the fine-grained native soils because they will not be feasible. The success of this procedure would depend primarily upon the extent of the

disturbed area. Stable subgrades may not be achievable if the thickness of the soft soil is greater than about 1 to 1½ feet.

- **Granular Fill** - The use of crushed stone or gravel could be considered to improve subgrade stability. Typical undercut depths would range from about ½ foot to 2 feet. The use of high modulus geotextiles i.e., engineering fabric, should be limited to outside of the Building Ground Improvements area. The maximum particle size of granular material placed immediately over geotextile fabric or geogrid should not exceed 2 inches.
- **Chemical Stabilization** - Improvement of subgrades with Portland cement, lime kiln dust, or Class C fly ash could be considered for unstable and plastic soil. Chemical modification should be performed by a pre-qualified contractor having experience with successfully stabilizing subgrades in the project area on similar sized projects with similar soil conditions.

Over-excavations should be backfilled with structural fill material placed and compacted in accordance with the following sections of this report. Subgrade preparation and selection, placement, and compaction of structural fill should be performed under engineering controlled conditions in accordance with the project specifications.

4.2.3 Material Requirements

General Structural Fill

General structural fill material should consist of approved materials, free of deleterious material and particles larger than about 4 inches. Deleterious material includes wood, organic waste, or any other extraneous or objectionable material. Organic content should be less than 3 percent by weight. The maximum particle size criteria may be relaxed by the geotechnical engineer of record depending on construction techniques, material gradation, allowable lift thickness and observations during fill placement. Soil for use as general structural fill material should conform to the following specifications:

Fill Type [1]	USCS Classification	Acceptable Location for Placement
Fine Grain Soil[2]	CL and ML (LL<45; PI<25)	All locations and elevations, except where select structural fill is specified
Granular Soil	GW, GP, SW, SP, GM[2], SM[2], GC[2], SC[2],	All locations and elevations, except where select structural fill is specified
On-site soil[2]	SM, ML	All locations and elevations, except where select structural fill is specified

1. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation.
2. Not suitable during periods of wet weather. See Wet Weather Earthwork section for further details.

Onsite material is expected to be suitable for reuse as general structural fill from based on the criteria above. However, the near surface soil at the site is predominantly fine grained and is considered moisture sensitive. Suitability for reuse will depend on the moisture content of the soil

at the time of construction. Moisture conditioning may be required to reuse onsite soil, including tilling and windrowing to dry back soil that is too wet of optimum to achieve adequate compaction. Drying back of soil is expected to be impossible during the wet season, which typically lasts from about October to May of the following year.

Select Structural Fill

Select structural fill materials recommended in the Foundations, Floor Slabs, and Pavements sections should meet the following specifications:

Fill Type [1]	OSSC 2018 Paragraph[3]	Acceptable Location for Placement
Dense-Graded Aggregate¾"-0 [2]	02630.10	Minimum 24-inch thickness below footings, except where it increases to 36-inches at NE and SE corners

1. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the geotechnical engineer for evaluation.
2. During periods of wet weather, fines content should be limited to no more than 5 percent per our recommendations in the Wet Weather Earthwork section.
3. Oregon Standard Specification for Construction 2018, published by the Oregon State Department of Transportation

4.2.4 Compaction Requirements

Recommendations for compaction under standard Proctor and modified Proctor compaction criteria are presented in the following table. The Costco development requirements reference the modified Proctor compaction test (ASTM D1557) as the basis for compaction of granular soil and standard Proctor (ASTM D698) for fine-grained soil. Our experience in Oregon indicates that the modified and standard Proctor compaction tests are both used commonly in the area, as appropriate based on soil type. For this project, we recommend standard Proctor criteria based on the fine grained nature of the onsite soil. We recommend that structural fill be tested for moisture content and relative density during placement. Should the results of the in-place density tests indicate that the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.

The following table indicates recommended compaction criteria:

ITEM	PERCENT COMPACTION (ASTM D 698) STANDARD	MOISTURE CONTENT	MINIMUM COMPACTION TESTING FREQUENCY PER LIFT
Scarified & Recompacted Site Subgrades	**95 minimum**	-2% to +2% of optimum	1 per 10,000 Square Feet
Under Buildings and Structures	98 minimum	-2% to +2% of optimum	1 per 10,000 Square Feet
Beneath Pavements and Walkways	98 minimum	-2% to +2% of optimum	1 per 15,000 Square Feet
Behind Retaining Walls (within 5 feet)	95 minimum 100 maximum	-2% to +2% of optimum	1 per 15,000 Square Feet
Utility trench backfill	98 minimum	-2% to +2% of optimum	1 per 150 Linear Feet
Lawns or Unimproved areas	92 minimum	-2% to +2% of optimum	1 per 20,000 Square Feet

Structural fill materials should be placed in horizontal, loose lifts not exceeding 9 inches in thickness and should be thoroughly compacted. Where light compaction equipment is used, as is customary within utility trenches and behind retaining walls, the lift thickness may need to be reduced to achieve the desired degree of compaction. Soil removed which will be used as structural fill should be protected from rain to aid in preventing an increase in moisture content.

When placing fill in areas of the site where existing slopes are steeper than 5H:1V the area should be benched to reduce the potential for slippage between existing slopes and fills. Benches should be wide enough to accommodate compaction and earth moving equipment and to allow placement of horizontal lifts of fill.

4.2.5 Difficult Excavation

Based on the depths to auger refusal and the planned finish grade elevations, boulders and/or localized zones of PWR and sandstone may be encountered. Boulders ranging from about basketball size to the size of a small automobile were visible at ground surface during the time of our explorations. PWR and rock will be difficult to excavate from confined excavations such as utility trenches. Terracon's opinion is that the site earthwork can be accomplished with large, heavy duty earthwork equipment. Even with larger equipment, some of these boulders may require considerable effort such the use of pneumatic hammers to excavate. PWR and sandstone can often be ripped in open cuts with larger dozers equipped with a single tooth ripper. However, this should be evaluated based on the required depth of excavation and actual rock materials encountered. Difficult excavation requirements can be further assessed following review of the final grading plan.

We recommend that a rock excavation definition be included in the grading contract for clarity. Rock excavation can be defined in many ways, a method specification based on the grading equipment commonly used in the project area is typical. The following is a guideline rock excavation specification for your review.

In Mass Excavation:	Material occupying an original volume of more than 1 cubic yard which cannot be excavated with a single-tooth ripper drawn by a crawler tractor having a minimum draw bar pull rating of not less than 56,000 pounds usable pull (Caterpillar D-8K or larger) or the excavator listed below.
In Trench Excavation:	Material occupying an original volume of more than 1/2 cubic yard which cannot be excavated with a track excavator having a bucket curling rate of not less than 25,700 pounds, using a rock bucket and rock teeth (Caterpillar 225 or larger).

Actual field conditions usually display a gradual weathering progression with poorly defined and uneven boundaries between layers of different materials. Rock levels in areas of weathered basalt can vary considerably in short horizontal distances and may be at higher or lower elevation between our boring locations.

We recommend that a contingency for difficult excavation requirements be provided for in the contract documents.

4.2.6 Grading and Drainage

Adequate positive drainage should be provided during construction and maintained throughout the life of the development to prevent an increase in moisture content of the foundation, pavement and backfill materials.

Gutters and downspouts should not discharge directly adjacent to the warehouse in landscape areas. This can be accomplished through the use of splash-blocks, downspout extensions, and flexible pipes that are designed to attach to the end of the downspout. Flexible pipe should only be used if it is daylighted in such a manner that it gravity-drains collected water away from structures. Splash-blocks should also be considered below hose bibs and water spigots. Paved surfaces which adjoin the warehouse should be sealed with caulking or other sealant to prevent moisture infiltration at the warehouse envelope; maintenance should be performed as necessary to maintain the seal.

4.2.7 Slopes

Typical slope configurations in unreinforced compacted fill and cuts are generally flatter than 2H:1V in the area of the subject site. If steeper slopes are required for site development, stability

analyses should be completed to design the final grading plan. At your request, site specific slope stability analysis could be performed based on the final site grading plans. The face of all fill slopes should be compacted to the minimum specification for fill embankments. Alternately, fill slopes can be overbuilt and trimmed to compacted material.

4.2.8 Groundwater Control

Groundwater was not encountered within the open boreholes at depths expected to affect warehouse or pavement construction. Specific recommendations for the underground storage tanks (USTs) are in Section 4.4. Localized perched water conditions may develop during extended periods of wet weather as water infiltrating the surface soils becomes trapped above less permeable material. We expect that positively grading excavations to direct flow to sumps that are continuously pumped should be adequate to remove groundwater inflow if encountered. Ultimately, the choice of any necessary dewatering methods is the Contractor's.

4.2.9 Temporary Excavation Slopes

The residual soils in the borings would be considered Type C soil with respect to OSHA trench excavation safety guidelines. Despite the in-situ stiffness of the on-site soils, the materials are prone to loss of strength when exposed to moisture. If Type C soils are encountered, temporary slopes created by utility trench excavation should be cut at a ratio of 1.5H:1V or flatter.

As a minimum, all temporary excavations should be sloped or braced as required by Occupational Safety and Health Administration (OSHA) regulations to provide stability and safe working conditions. Temporary excavations will most likely be required during grading operations. The grading contractor, by his contract, is usually responsible for designing and constructing stable temporary excavations and should shore, slope, or bench the sides of the excavations as required, to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

4.2.10 Construction Considerations

Residual soil at the site is moisture sensitive and will lose strength and stability and will become difficult to adequately compact as their moisture content increases above about 2 percent above optimum. Performing site earthwork between June and October will reduce the potential for earthwork problems associated with wet soil.

Performing site preparation and earthwork at other times of the year increases the potential for having to perform remedial work on the subgrade soil. Construction traffic over wet subgrades should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades. If the subgrade should become, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and re-compacted. The use of lime treatment generally reduces the

plasticity of clays and silts, makes them less susceptible to moisture fluctuations, and may make them more workable during wetter periods of the year.

Protecting the exposed subgrade soil from infiltration of surface water by keeping the site grades sloped to promote runoff in advance of rain events will also reduce the potential for needing to perform remedial work on wet subgrades. We also recommend that exposed subgrades be "sealed" by rolling them with rubber-tired equipment or smooth drum rollers at the end of each work day and in advance of anticipated precipitation.

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade, and prior to placing reinforcing steel in the footing excavations.

4.2.11 Wet Weather Earthwork

The near-surface soils have appreciable fines content (silt and clay-sized soil finer than the standard U.S. No. 200 mesh sieve) based on our visual observations and lab testing. As such, these soils are considered to be highly moisture sensitive. The suitability of soil used for structural fill or utility trench backfill depends primarily on their grain-size distribution and moisture content when they are placed. As the fines content increases, soils become more sensitive to small changes in moisture content. Soil containing more than about 5 percent fines (by weight) cannot be consistently compacted to a firm, unyielding condition when the moisture content is more than about 2 percentage points above or below optimum. Optimum moisture content is the moisture content at which the maximum dry density for the material is achieved in the laboratory following ASTM procedures.

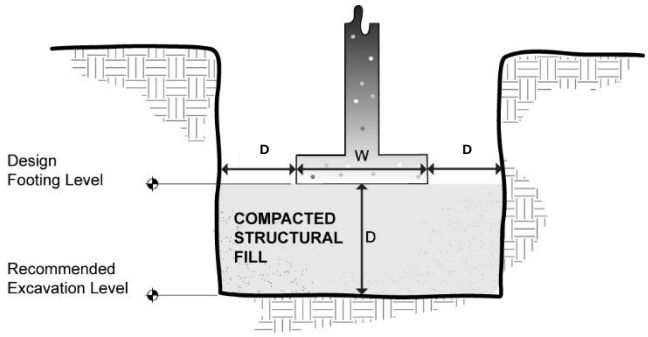
If inclement weather or in situ soil moisture content prevents the use of on-site material as structural fill, we recommend the use of import granular fill containing less than 5 percent by weight passing the U.S. No. 200 sieve, based on the fraction passing the U.S. No. 4 sieve.

To maintain moisture content, we recommend that all stockpiled soils for use as compacted fill be protected with polyethylene sheeting anchored to withstand local wind conditions.

4.3 Foundations

Shallow foundations are recommended for the proposed structures. The foundations should bear on at least a 2-foot thickness of properly placed and compacted select structural fill consisting of dense-graded aggregate base that extends at least 24 inches beyond the edge of the footing on all sides. Thickness of select structural fill should be increased to 3 feet at the northeast and southeast corners of the warehouse, as shown on Exhibit A-7, due to existing undocumented fill. Extents of removal and replacement should correspondingly increase to 3 feet beyond the edge of footing on all sides.

The successful performance of shallow foundations will be dependent upon appropriate site preparation and evaluation of the foundation bearing conditions at the time of foundation construction. Any unsuitable subgrade soils should be stabilized in place or be excavated and replaced with structural fill as described by the sketch below.



Overexcavation / Backfill

4.3.1 Design Recommendations

Design recommendations for a shallow foundation system are presented in the following table and paragraphs.

Description	Value
Net allowable bearing capacity [1]	3,000 psf
Minimum embedment below lowest adjacent finished grade for frost protection and protective embedment [2]	24 inches
Minimum width for continuous wall footings	24 inches
Minimum width for isolated column footings	24 inches
Approximate total settlement [3]	Up to 1 inch
Estimated differential settlement [3]	Less than L/500 along walls. Less than ½ inch over 50 feet between interior columns.
Passive Lateral Resistance	300 pounds per cubic foot (pcf) (unfactored)
Coefficient of Friction	0.35 (unfactored)

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation.
2. The footing embedment depth recommended exceeds the frost depth for the area. Footings should be embedded 24 inches due to settlement reasons.

3. The actual magnitude of settlement that will occur beneath the foundations would depend upon the variations within the subsurface soil profile, the structural loading conditions and the quality of the foundation excavation. The estimated total and differential settlements listed assume that the foundation related earthwork and the foundation design are completed in accordance with our recommendations. Support of footings on or above existing fill soils is discussed in this report. However, even with the recommended construction testing services, there is an inherent risk for the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill, but can be reduced by performing additional testing and evaluation.

Uplift resistance of shallow foundations should be based on the weight of the foundation concrete and the soil overlying the plan area of the foundation. We recommend a soil unit weight of 90 pcf for uplift calculations.

4.3.2 Construction Considerations

We recommend that the footing excavations be observed and evaluated by a representative of Terracon prior to placing reinforcing steel and concrete. The base of all foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed as soon as practical after excavating to reduce moisture exposure and bearing soil disturbance. Should the soils at the bearing level become excessively disturbed or saturated, the affected soil should be removed prior to placing concrete.

4.4 Underground Storage Tanks

Underground storage tanks (USTs) are expected to be locates in the northeast corner of the site to provide fuel storage for the fueling station. Maximum fill depths of up to 20 feet were encountered in the borings near the anticipated UST location. We assume that the bottom of the UST excavations will be approximately 20 feet below finish grade.

Groundwater level from the piezometer installed in boring F-4 near the expected UST location is approximately at the anticipated base elevation of the excavation. Terracon did not conduct a groundwater study of sufficient duration to estimate seasonal groundwater level fluctuation. We recommend that USTs be anchored against buoyant forces. The bottom of the excavation may be below the water table. We anticipate that continuously pumped shallow sumps in the bottom of the excavation will be sufficient to control groundwater in the excavation.

4.5 Seismic Considerations

Based on the N-values from the soil test borings, it is our opinion that a 2014 Oregon Structural Specialty Code (OSSC) Site Class D is appropriate for the site. The OSSC requires a site soil profile determination extending a depth of 100 feet for seismic site classification. This seismic site class

definition considers that auger refusal indicating apparent bedrock encountered at termination depths in our borings continues below the termination depths.

Based on groundwater conditions observed, on the relative density/consistency of site soil, and the silt and clay content of the subsurface soil, it is our opinion that the risk of liquefaction of site soil is low.

Based on our review of the available fault information, it is our opinion that the risk of surface rupture due to ground faulting is very low.

We do not consider the site to be within the proximity of seismic hazard zones that would indicate the need for a separate Engineering Geology Investigation or Geologic Hazards Evaluation.

4.6 Floor Slabs

4.6.1 Design Recommendations

The subgrade soil for the floor slabs is expected to be on-site low to moderate plasticity naturally occurring or structural fill soil. Based on these considerations and provided the site is prepared as outlined in this report, it is our opinion that the floor slabs do not require specific design considerations for swell potential. For the anticipated soil subgrade conditions, reinforcing steel will not be required in the floor slab.

Description	Value
Interior floor system	Slab-on-grade concrete.[1]
Subgrade	Approved existing low to moderate plasticity native soil or controlled structural fill. Subgrades are to be scarified and compacted to a depth of 12 inches.
Sub-base	Not required.
Stone base	6 inches dense-graded aggregate base course
Modulus of subgrade reaction[3]	150 pounds per square inch per in (psi/in) for point loading conditions

Description	Value
1. Floor slabs should be structurally independent of any building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation. 2. We recommend subgrades be maintained at the proper moisture condition until floor slabs and pavements are constructed. If the subgrade should become desiccated prior to construction of floor slabs and pavements, the affected material should be removed or the materials scarified, moistened, and re-compacted. Upon completion of grading operations in the building areas, care should be taken to maintain the recommended subgrade moisture content and density prior to construction of the building floor slabs. 3. The native soil at subgrade are expected to develop a subgrade modulus value of 150 psi/in when they are approved as undisturbed residual soils or controlled structural fill. Soft or unstable subgrade will be remediated by scarifying and re-compacting or by over-excavation and replacement.	

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Sub-drainage systems do not appear necessary.

Terracon typically recommends installation of a vapor barrier beneath the slab to mitigate potential moisture issues such as flooring performance and mold. However, we understand that Costco Wholesale has determined that moisture barriers are not to be used in construction of Costco Wholesale structures because of adverse effects on concrete curing and performance. Therefore, we have provided construction recommendations that do not include installation of a moisture barrier, with the understanding that there will be an increased risk for adverse moisture issues.

4.6.2 Construction Considerations

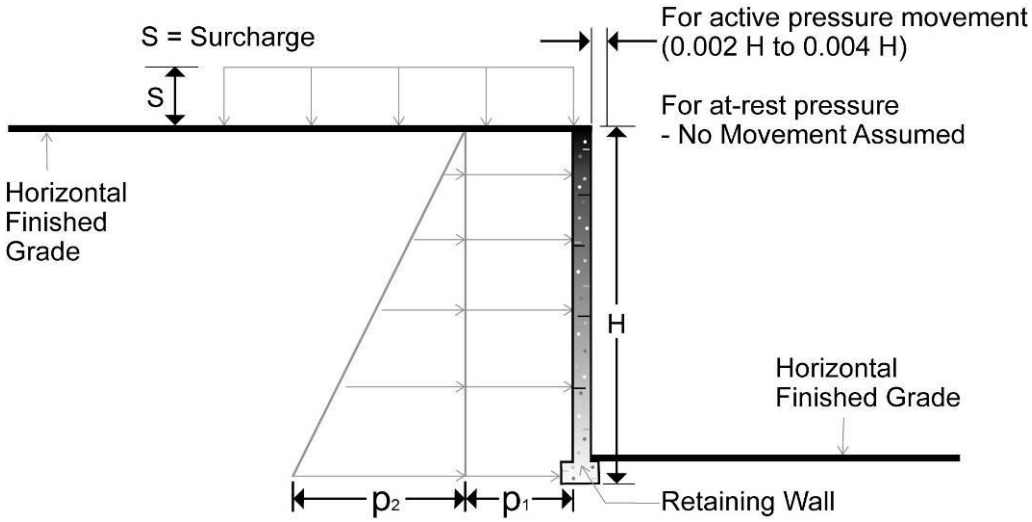
On most project sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. As a result, the floor slab subgrade may not be suitable for placement of base stone and concrete and corrective action may be required.

We recommend that the area underlying the floor slab be rough-graded and then proof-rolled with a minimum of four passes of a loaded tandem axle dump truck under observation of a Terracon representative. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are observed should be repaired by removing and replacing the affected material with properly placed and compacted structural fill. All floor slab subgrade areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to placement of the aggregate base course and concrete.

4.7 Retaining/Below Grade Walls

The lateral earth pressure recommendations herein are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of modular block - geogrid reinforced backfill walls. Modular block wall design and construction recommendations will be provided under separate cover as an addendum to this report.

Reinforced concrete walls with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to those indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of free standing cantilever retaining walls and assumes wall movement. The "at rest" condition assumes no wall movement. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls.



EARTH PRESSURE COEFFICIENTS

Earth Pressure Conditions	Coefficient for Backfill Type	Equivalent Fluid Density, p_2 (pcf)	Surcharge Pressure, p_1 (psf)
Active (Ka)	Granular - 0.29	35	(0.29)S
	Sandy Silt/Silty Sand - 0.36	40	(0.36)S
At-Rest (Ko)	Granular - 0.46	60	(0.46)S
	Sandy Silt/Silty Sand - 0.53	65	(0.53)S
Ultimate Passive (Kp)	Granular - 3.4	400	---
	Sandy Silt/Silty Sand – 2.8	300	---

Applicable conditions to the above include:

- For active earth pressure, wall must rotate about base, with top lateral movements of about 0.002 **H** to 0.004 **H**, where **H** is wall height
- For passive earth pressure to develop, wall must move horizontally to mobilize resistance
- Uniform surcharge, where S is surcharge pressure
- In-situ soil backfill weight a maximum of 120 pcf
- Horizontal backfill, compacted between 95 and 98 percent of standard Proctor maximum dry density
- Loading from heavy compaction equipment not included
- No hydrostatic pressures acting on wall
- No dynamic loading
- No safety factor included in soil parameters
- Ignore passive pressure in frost zone

Backfill placed against structures should consist of granular soils or low plasticity cohesive soil. For the granular values to be valid, the granular backfill must extend out from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively. To calculate the resistance to sliding, a value of 0.35 should be used as the ultimate coefficient of friction between the footing and the underlying soil.

We recommend foundation drains for exterior footings and walls be constructed in accordance with CWDR Detail 16_17.

If controlling hydrostatic pressure behind the wall as described above is not possible, then combined hydrostatic and lateral earth pressures should be calculated for lean clay backfill using an equivalent fluid weighing 90 and 100 pcf for active and at-rest conditions, respectively. For granular backfill, an equivalent fluid weighing 85 and 90 pcf should be used for active and at-rest, respectively. These pressures do not include the influence of surcharge, equipment or pavement loading, which should be added. Heavy equipment should not operate within a distance closer than the exposed height of retaining walls to prevent lateral pressures more than those provided.

4.8 Pavements

4.8.1 Subgrade Preparation

On most project sites, the site grading is accomplished relatively early in the construction phase. However, as construction proceeds, excavations are made into these areas, rainfall and surface water saturates some areas, heavy traffic from concrete trucks and other delivery vehicles disturbs the subgrade and many surface irregularities are filled in with loose soils to improve the surface temporarily. As a result, the flatwork and pavement subgrades, initially prepared early in the project, should be carefully evaluated as the time for pavement construction approaches.

We recommend scarifying, moisture conditioning, and re-compaction of the top 12 inches of the subgrade. Following reworking of the subgrade, we recommend that the pavement subgrades be proof-rolled within two days prior to commencement of actual paving operations. Areas not in compliance with the required ranges of moisture or density should be moisture conditioned and re-compacted. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired according to the recommendations in the Subgrade Stabilization section of this report. If a significant precipitation event occurs after the evaluation or if the surface becomes disturbed, the subgrade should be reviewed by qualified personnel immediately prior to paving. The subgrade should be in its finished form at the time of the final review.

4.8.2 Design Considerations

The following concrete pavement designs are based upon the design methods described in the "AASHTO Guide for Design of Pavement Structures 1993" published by the American Association of State Highway and Transportation Officials and a 20-year design period. The following asphalt pavement designs are based upon the design methods described in the Asphalt Institute Manual Series No. 1 (MS-1).

A CBR value of 5 was used for the untreated subgrade thickness design. Per the Costco Wholesale Development Requirements, the following traffic values were used in developing the pavement thickness design.

Heavy Duty: 30 trucks per day over a 20-year design life
Standard Duty: 6,600 cars per day over a 20-year design life

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to parking lots and drives should slope down from pavement edges at a minimum 2 percent;
- The subgrade and the pavement surface should have a minimum 2 percent slope to promote proper surface drainage;
- Radial finger drains at catch basins per CWDR Detail 16-16;
- Install joint sealant and seal cracks immediately.

4.8.3 Minimum Pavement Thicknesses

Recommended minimum pavement and stone base thicknesses are listed in the tables below.

Exterior Pavements

Pavement Type	Material	Layer Thickness (inches)	
		Standard Duty / Fuel Center	Heavy Duty
Rigid	Portland Cement Concrete (4,000 psi)	9	9
	Aggregate Base Course	4	4
Flexible	Asphalt Surface Course 50-blow Marshall Mix / No Recycled Asphalt / Binder Grade PG 58-16	2 [1]	2 [1]
	Binder Course 50-blow Marshall Mix / Binder Grade PG 58-16	2	3
	Aggregate Base Course	6	10

1. Asphalt surface course minimum thickness of 1-3/4 inches in accordance with Costco "Asphalt Paving" specification, Section 321216, Part 1.2.C.
2. The Costco "Asphalt Paving" specification, Section 321216, Part 1.2.E allows use of pavement mix with 1-inch maximum aggregate size (MAS). The recommended Light Duty Asphalt Base Course thickness is thinner than 3 times the nominal maximum aggregate size for the 1-inch MAS mix. The 1-inch MAS mix should not be used for the Light Duty Asphalt Base Course.

Note: Pavement materials and construction must meet the Costco Master Specification for Asphalt Paving that contains very specific pavement material (asphalt, aggregate and concrete) criteria and construction practices to be used with respect to compaction and material sampling. The general contractor and pavement construction subcontractor should be aware that asphalt and concrete mix designs must be submitted to the design architect and Terracon at least 45 days prior to the scheduled production and laydown for review and approval.

We recommend a Portland cement concrete (PCC) pavement be utilized in entrance and exit sections, loading dock areas, or other areas where extensive wheel maneuvering are expected. Although not required for structural support, the base course layer is recommended to develop a more stable subgrade for concrete truck traffic associated with the pavement construction. Proper joint spacing (12 to 15 feet) will also be required to prevent loss of load transfer across saw-cut crack control joints. All joints should be properly sealed to reduce water infiltration.

The dumpster pad should be large enough to support the wheels of the truck which will bear the load of the dumpster. We recommend a minimum of 10 inches of PCC (4,000 psi 28-day compressive strength) underlain by 6 inches of aggregate base course for the dumpster pad.

4.8.4 Concrete Sidewalks

Concrete sidewalks around the warehouse should be 6 inches thick and supported on a minimum 4-inch thick layer of aggregate base course. The concrete and stone should be placed on an

approved soil subgrade. We recommend that the concrete be mixed with proper air-entrainment and have a 28-day unconfined compressive strength of 4,000 psi. A 4,500 psi compressive strength is recommended if de-icing chemicals will be used regularly on the surface of the sidewalks.

4.8.5 Pavement / Sidewalk Maintenance

The pavement sections provided in this report represent minimum recommended thicknesses and as such, periodic maintenance should be anticipated. Preventive maintenance should be planned and provided for through an on-going pavement management program. Preventive maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment. Preventive maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventive maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements. Prior to implementing any maintenance, additional engineering observation is recommended to determine the type and extent of preventive maintenance. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required.

4.9 Light Poles

Light poles are expected to be installed in landscaped and pavement areas. Pole foundations should be designed assuming unconstrained conditions. The soils surrounding the pole foundations / bases are expected to consist of stiff or medium dense to dense native residual soils or controlled, structural fill material. Pole foundations should be designed using an allowable lateral bearing capacity of 200 psf per foot of embedment.

4.10 Stormwater Management

The City of Salem requires 80 percent of annual stormwater to be treated onsite, and that onsite facilities have capacity to control the 2-year and 10-year precipitation events. Terracon provided a preliminary infiltration rate for flow control design in our draft geotechnical engineering report for this project, dated January 12, 2018. Preliminary stormwater infiltration pond locations and elevations were proposed based, in part, on this rate. Both ponds were proposed to be located along the east side of the site, one to the north and the other to the south. We returned to the field to perform additional exploration and testing to confirm this rate and to collect additional information related to groundwater levels at the proposed infiltration pond locations in late January 2018.

Borings IT-1 and IT-2 were planned in the proposed north and south infiltration pond locations, respectively. Borehole infiltration tests were planned at a depth of 17.5 feet in IT-1, and 15 feet in IT-2. Three attempts were made to advance IT-1 to the planned test elevation with each meeting early refusal at depths ranging from approximately 6 to 11 feet bgs. Boring IT-2 was successfully

advanced to the planned test depth, however static water levels were observed to be approximately 3 to 4 feet above the planned test elevation. These conditions precluded performing infiltration testing as planned.

Terracon collected additional data from the VWPs in borings F-4 and installed another VWP in boring W-6. Data collected from F-4 on January 30, 2018 indicates groundwater levels were approximately 7 feet above the proposed bottom elevation of the north pond, and approximately at the elevation of the south pond. Data collected from F-4 on February 18, 2018 indicates water levels fell approximately 4 feet from a peak on January 30, 2018. Data collected from W-6 on February 18, 2018 indicate water levels less than 5 feet below the bottom of the south infiltration pond.

It is Terracon's opinion that stormwater infiltration is not feasible at the proposed locations and elevations based on the groundwater level observations discussed in this section. We understand that the City of Salem has relaxed its requirements for stormwater infiltration on this site and that stormwater management will be accomplished with bio-swales with overflows connected to the storm sewer. Bottom elevation of the planned swales is 346 feet.

Groundwater data collected on April 8, 2018 indicate the highest recorded groundwater level at F-4 of elevation 346. Highest recorded groundwater level at W-6 was at elevation 351. Existing stormwater features around the site include a pond in the middle of the site, a ditch along 27th Avenue SE, and a City owned facility at the corner of 27th Avenue SE and Kuebler Boulevard.

Based on the available information, our opinion is that groundwater intrusion into the swales may be expected in the wet season. Furthermore, seepage may be expected from permanent cut slopes during the wet season which could cause sloughing depending on slope protection. Vegetation and rip rap are examples of measures that could be used to mitigate surficial sloughing.

We recommend that we be onsite to observe excavation of the permanent cut slopes going down to the proposed bio-swales. The purpose for our being onsite would be to look for indications of groundwater fluctuation and/or seepage at the cut face. We would make recommendations for measures to mitigate areas where potential for instability and surficial sloughing exists. Even with careful observation during construction, sloughing and instability of cut slopes may not become apparent until after construction.

4.11 Corrosivity

Soil samples from three borings were composited then tested for pH, soil resistivity, chloride and sulfate. The test results are presented in Appendix B and summarized below:

Analysis	Results
Soil pH	7.76
Water Soluble Sulfate	83 mg/kg
Chlorides	30 mg/kg
Resistivity	7,760 ohm-cm

Based on our review of the laboratory testing, it appears that the on-site soils have a moderate corrosive potential to uncoated metal pipes. With respect to concrete, we recommend the use of Type I/II cement in concrete that will be in contact with the soil.

4.12 Water Quality

We have assumed that domestic water for the development will be provided from the City of Salem Public Works Department. A copy of their annual water quality report (as posted on their internet site) is included in Appendix B.

4.13 Additional Study

Terracon will be performing additional explorations at retaining wall locations near the northeast corner of the site and near the southeast corner of the warehouse to assess soil parameters for wall design. We also plan to excavate test pit explorations in the proposed retail pad on the north side of the site. Results of these explorations will be issued in an addendum to this report.

5.0 GENERAL COMMENTS

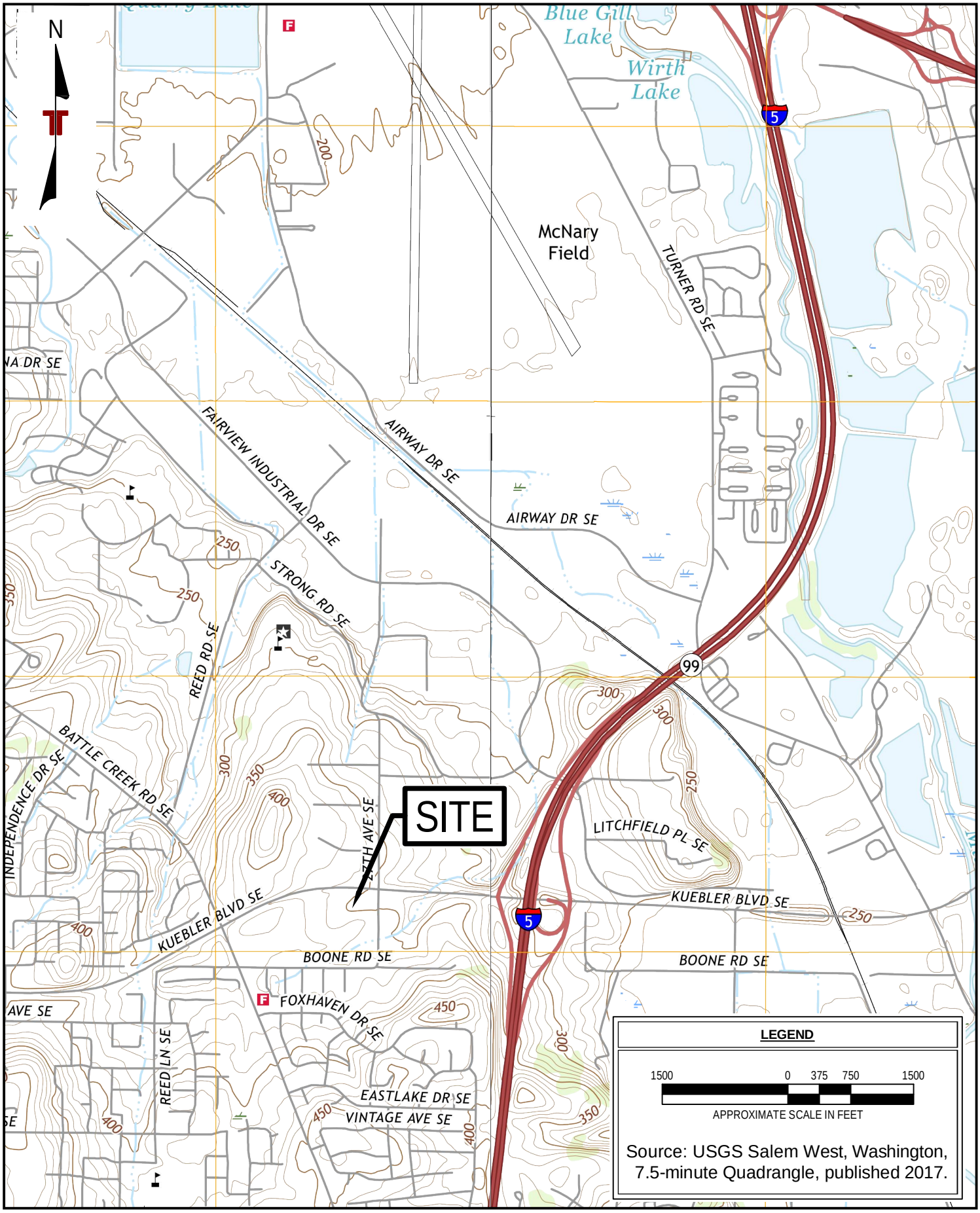
Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation 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 across the site, or due to the modifying effects of 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, 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, either expressed 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



Project Mngr:	JMS
Drawn By:	AMP
Checked By:	TLH
Approved By:	JMS

Project No.	82175107
Scale:	AS SHOWN
File No.	Exhibit A-1
Date:	January 2018

Terracon
Consulting Engineers and Scientists
21905 64th Avenue W., Ste 100 Mountlake Terrace, WA 98043
PH. (425) 771-3304 FAX. (425) 771-3549

SITE LOCATION PLAN

Costco Warehouse CW# 17-0460
Kuebler Boulevard & 27th Avenue
Salem, Oregon

EXHIBIT

A-1

RETAIL PAD
23,700 SF
FFE= 365.50

RETAIL
5,900 SF
LOT 3

Clinic
7 SF
T 5

COSTCO WHOLESALE
160K MASTER FOOTPRINT
FFE= 365.00
364.5
FF ELEV.

P-1 P-2A/B P-3 P-4 P-5 P-6 P-7 P-8 P-9 P-10 P-11 P-12 P-13

TP-1 TP-2 TP-3 TP-4 TP-5 TP-6 TP-7 TP-8 TP-9

B-1A/B B-2 B-3 B-4 B-5 B-6A/B B-7 B-8 B-9A B-9B B-10 B-11 B-12 B-13 B-14 B-15 B-16 B-17 B-18 B-19 B-20 B-21

F-1 F-2 F-3 F-4 F-5 F-6 F-7

W-1 W-2A W-2B W-3A W-3B W-4 W-5 W-6 W-7 W-8

DP-1 DP-2

IT-1A/B IT-1C IT-2

5.8% 2.8% 1.0% 5.0% 5.7% 5.8% 6.5%

A A' B B' C C' D D' F F' m m'

N

SCALE IN FEET 50 0 25 50

GREEN INK GRADING PLAN DATED MARCH 16, 2018 PROVIDED BY DOWL AND MODIFIED BY TERRACON CONSULTANTS, INC.

LEGEND

B-1 — APPROXIMATE LOCATION OF BORING

TP-1 — APPROXIMATE LOCATION OF TEST PIT

A A' — APPROXIMATE LOCATION OF CROSS SECTION LINE

Project Mngr:	JMS
Drawn By:	AMP
Checked By:	TLH
Approved By:	JMS

Project No.	82175107
Scale:	AS SHOWN
File No.	Exhibit A-2
Date:	April 2018

Terracon
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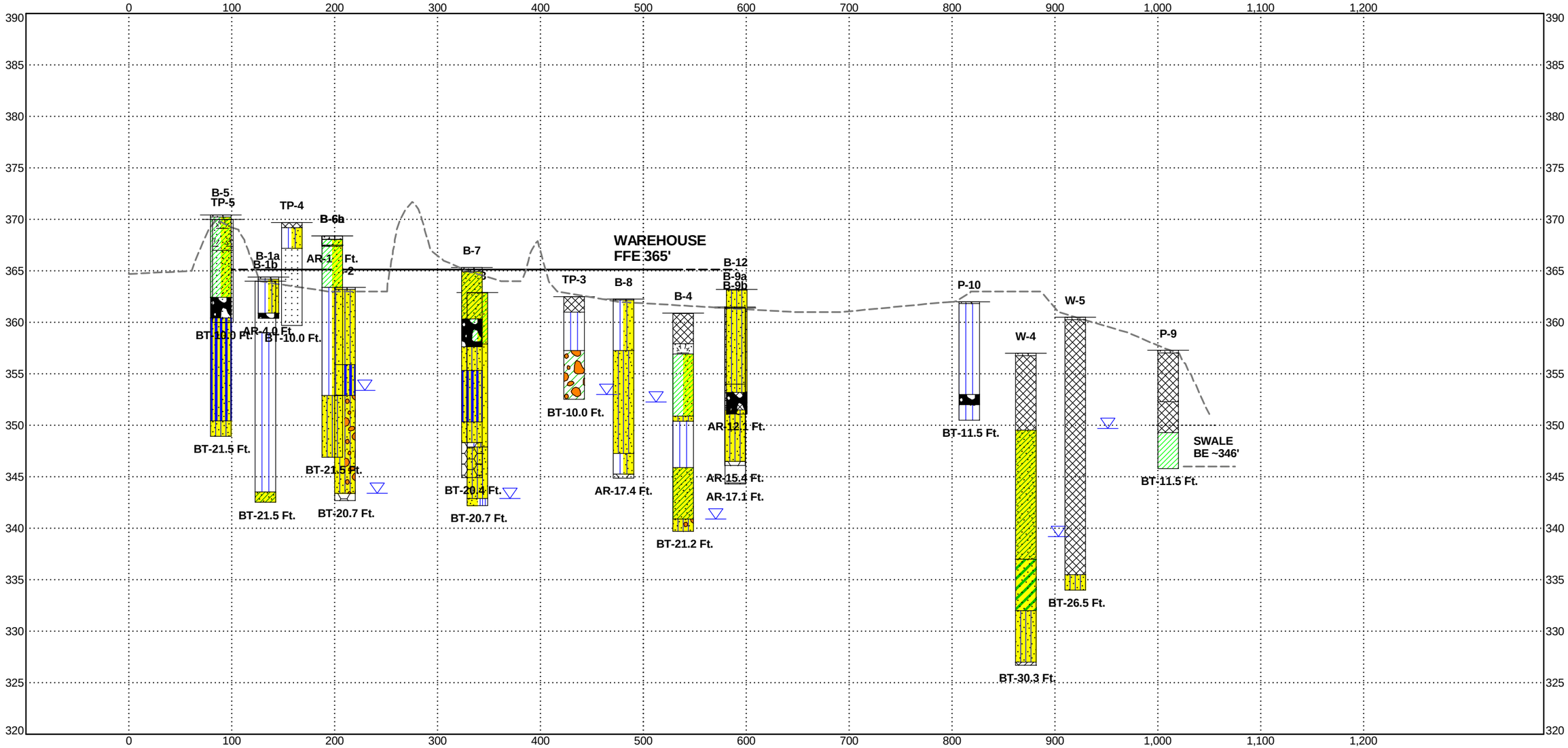
SITE AND EXPLORATION PLAN

Costco Warehouse CW# 17-0460
Kuebler Boulevard & 27th Avenue
Salem, Oregon

EXHIBIT
A-2

◄ A

A' ►



Explanation

B-1a — Borehole Number

Moisture Content — %w — LL PL — Liquid and Plastic Limits

Sampling (See General Notes) — Borehole Lithology

AR / BT — Borehole Termination Type

Water Level Reading at time of drilling.

Water Level Reading after drilling.

Topsoil | Silt with Sand | Boulders and Cobbles | Silt | Sandy Lean Clay

Silty Sand | Sandy Silt | Silty Sand with Gravel | Basalt | Lean Clay with Sand

NOTES:

See Exhibit A-2 for orientation of soil profile.
See General Notes in Appendix C for symbols and soil classifications.
Soils profile provided for illustration purposes only.
Soils between borings may differ
AR - Auger Refusal
BT - Boring Termination

Project Manager: J. Schmidt	Project No.: 82175107
Drawn by: T. Hesedahl	Scale: horiz 1":100', vert 1"=10'
Approved by: J. Schmidt	File Name: ExhA3
Date: 4/16/2018	

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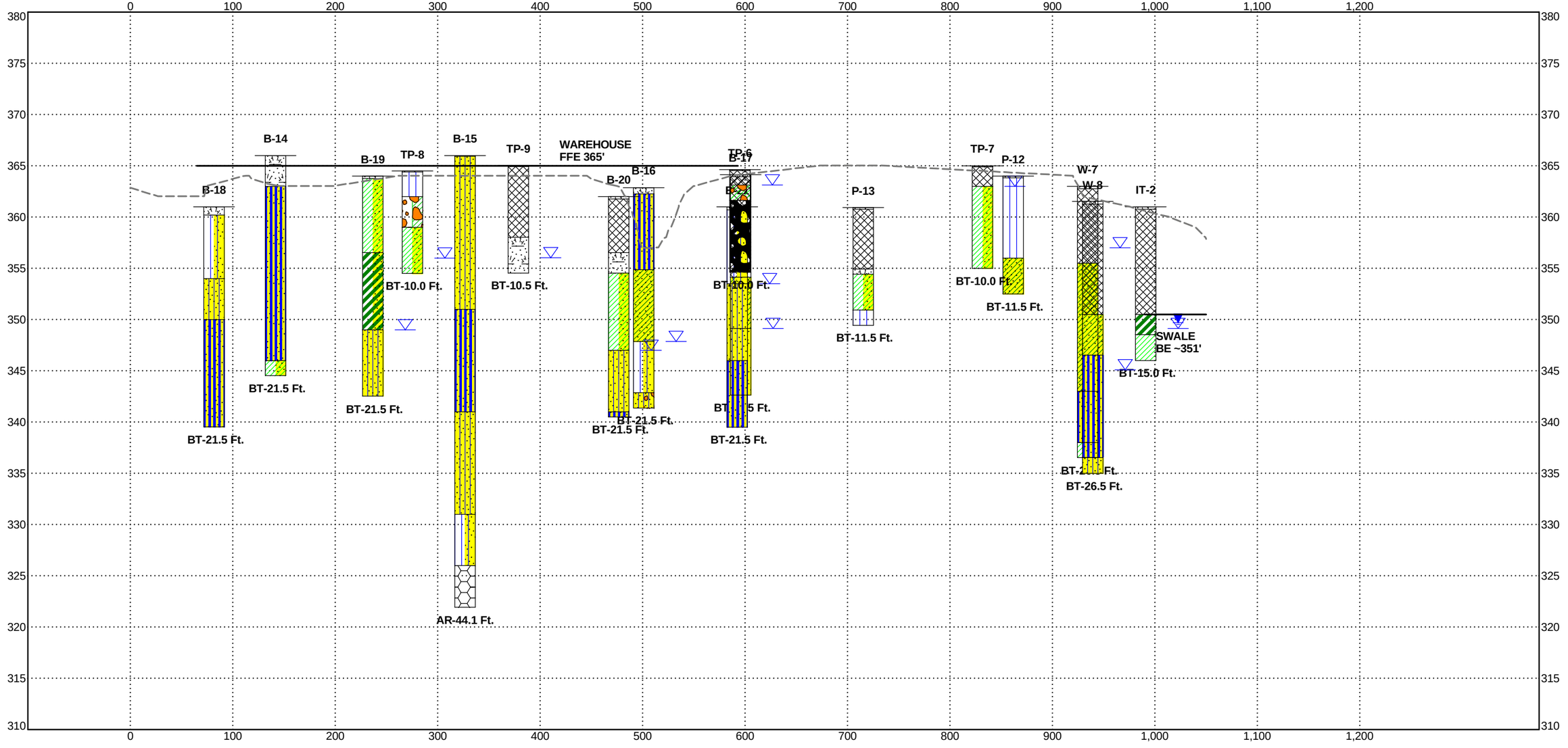
SUBSURFACE PROFILE

Section A-A'
COSTCO WAREHOUSE CW# 17-0460
KUEBLER BOULEVARD & 27TH AVENUE
SALEM, OR

EXHIBIT 3

◄ B

B' ►



Explanation

B-14 — Borehole Number

Moisture Content — %w

LL PL — Liquid and Plastic Limits

Sampling (See General Notes)

Borehole Lithology

AR / BT — Borehole Termination Type

▽ Water Level Reading at time of drilling.

▼ Water Level Reading after drilling.

Topsoil | Sandy Silt | Lean Clay with Sand | Silty Sand | Silt with Sand

Basalt | Sandy Lean Clay | Silty Sand with Gravel | Fill (made ground) | Fat Clay with Sand

NOTES:

See Exhibit A-2 for orientation of soil profile.
See General Notes in Appendix C for symbols and soil classifications.
Soils profile provided for illustration purposes only.
Soils between borings may differ
AR - Auger Refusal
BT - Boring Termination

Project Manager: J. Schmidt	Project No.: 82175107
Drawn by: T. Hesedahl	Scale: horiz 1":100', vert 1"=10'
Approved by: J. Schmidt	File Name: ExhA4
Date: 4/16/2018	

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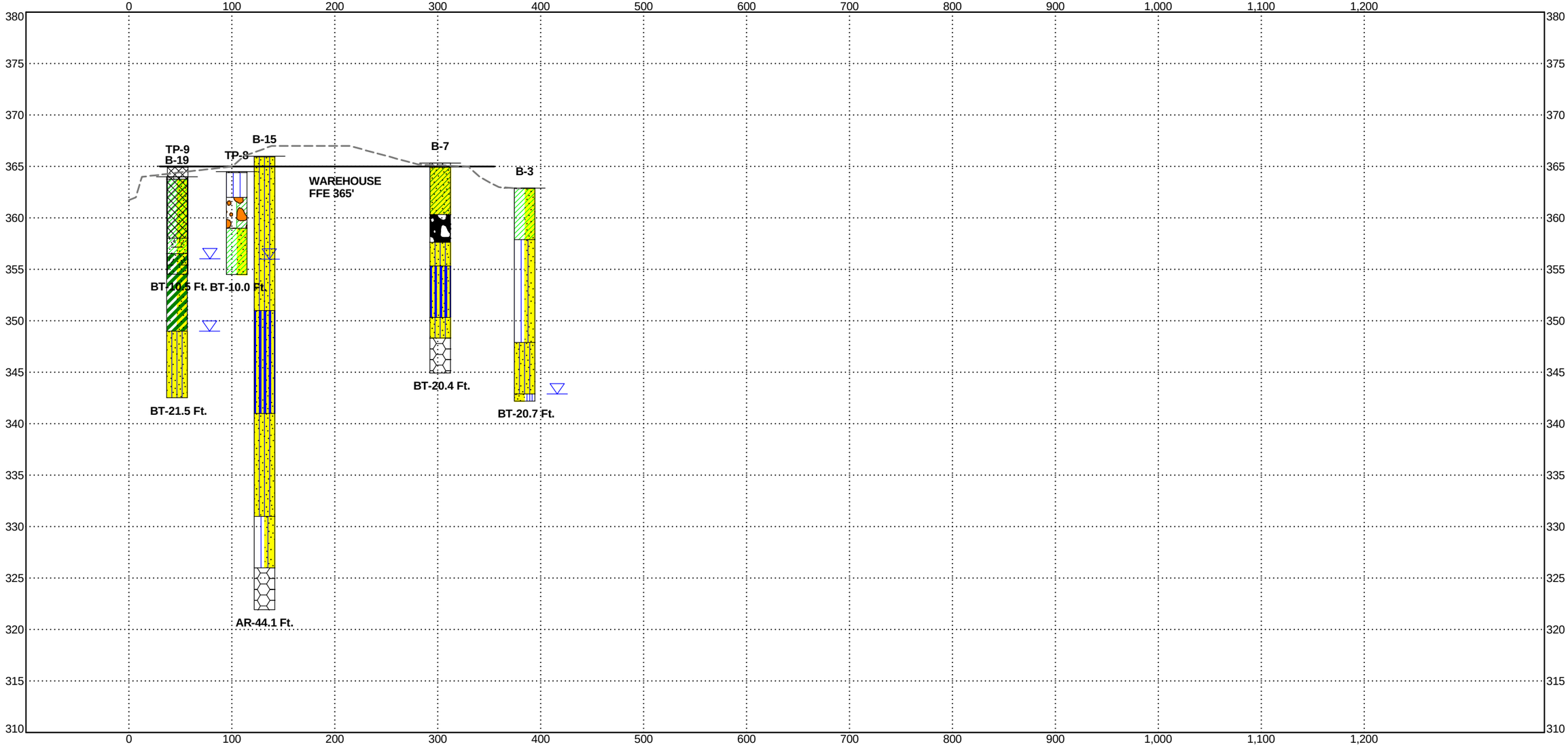
SUBSURFACE PROFILE

Section B-B'
COSTCO WAREHOUSE CW# 17-0460
KUEBLER BOULEVARD & 27TH AVENUE
SALEM, OR

EXHIBIT 4

C

C'



Explanation

B-3 — Borehole Number

Moisture Content — %w

LL PL — Liquid and Plastic Limits

Sampling (See General Notes)

Borehole Lithology

AR / BT — Borehole Termination Type

Water Level Reading at time of drilling.

Water Level Reading after drilling.

Topsoil

Lean Clay with Sand

Silt with Sand

Silty Sand

Poorly-graded Sand with Silt

Sandy Lean Clay

Boulders and Cobbles

Sandy Silt

Basalt

Fat Clay with Sand

NOTES:

See Exhibit A-2 for orientation of soil profile.
See General Notes in Appendix C for symbols and soil classifications.
Soils profile provided for illustration purposes only.
Soils between borings may differ
AR - Auger Refusal
BT - Boring Termination

Project Manager: J. Schmidt	Project No.: 82175107
Drawn by: T. Hesedahl	Scale: horiz 1":100', vert 1"=10'
Approved by: J. Schmidt	File Name: ExhA5
Date: 4/16/2018	

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Mountlake Terrace, WA
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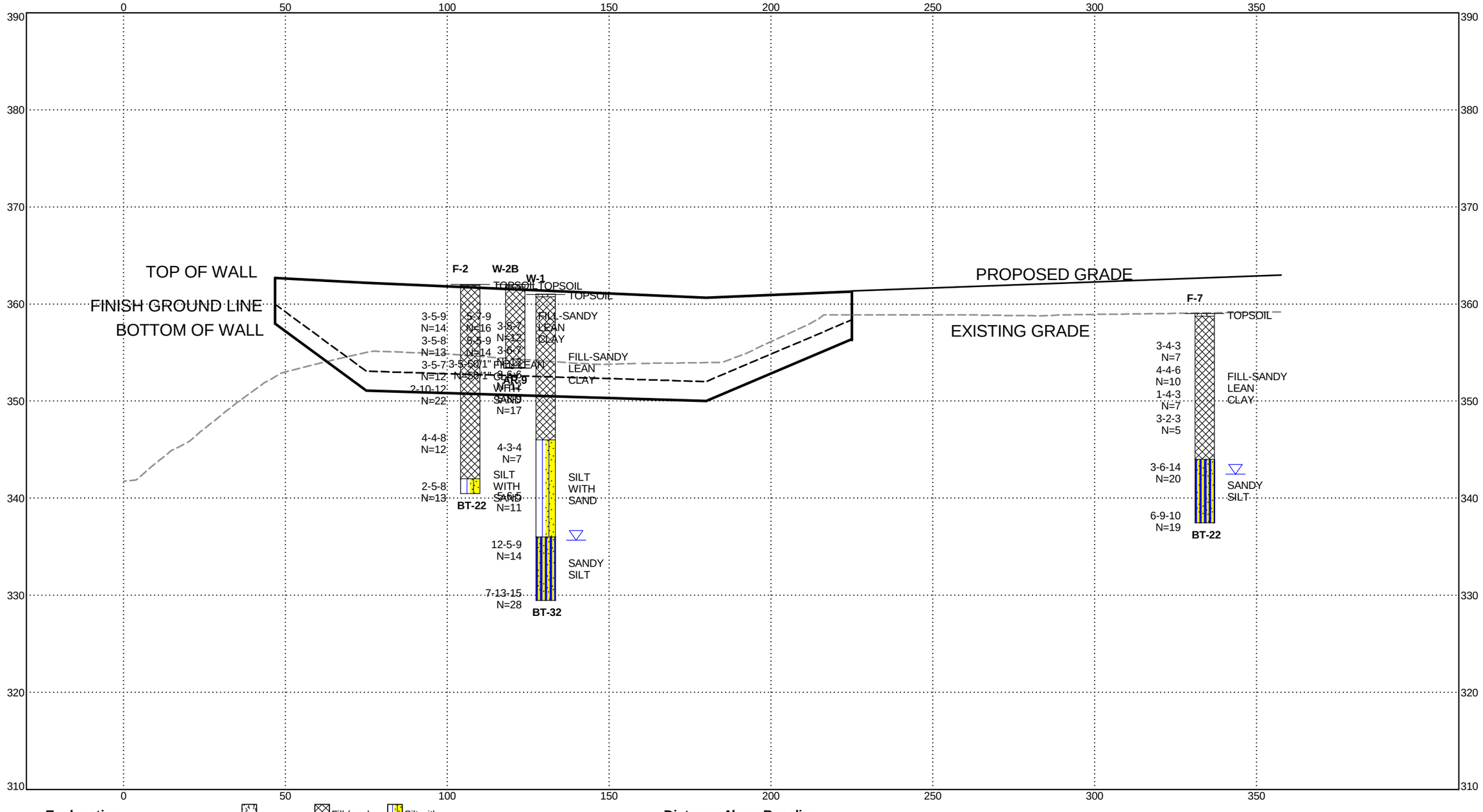
SUBSURFACE PROFILE

Section C-C'
COSTCO WAREHOUSE CW# 17-0460
KUEBLER BOULEVARD & 27TH AVENUE
SALEM, OR

EXHIBIT 5

D
Northeast Retaining Wall

D'
Northeast Retaining Wall'



Explanation

F-2 — Borehole Number
Borehole Lithology
AR / BT — Borehole Termination Type

Water Level Reading at time of drilling.
Water Level Reading after drilling.

Topsoil
Fill (made ground)
Silt with Sand
Sandy Silt
Boulders and Cobbles

NOTES:
See Exhibit A-2 for orientation of soil profile.
Soils profile provided for illustration purposes only.
Soils between borings may differ
AR - Auger Refusal
BT - Boring Termination

Project Manager: J. Schmidt	Project No.: 82175107
Drawn by: T. Hesedahl	Scale: Horiz. 1":30' Vert. 1"=10'
Approved by: J. Schmidt	File Name: 82175107_D-D
Date: 4/5/2018	

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA
PH. 425-771-3304 FAX. 425-771-3549

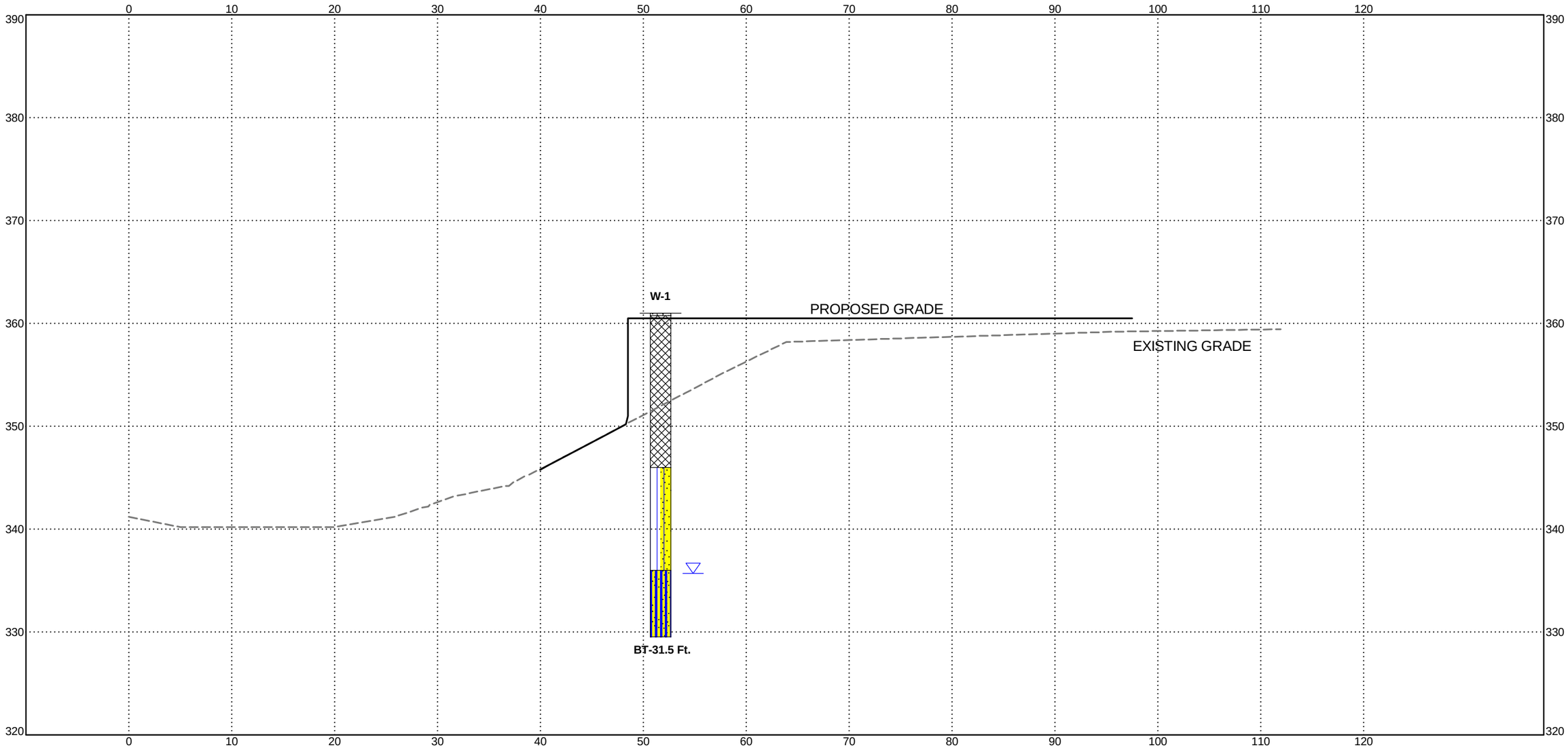
SUBSURFACE PROFILE

Section D-D'
COSTCO WAREHOUSE CW# 17-0460
KUEBLER BOULEVARD AND 27TH AVENUE
SALEM, OR

EXHIBIT
6

E

E'



Topsoil

Fill (made ground)

Silt with Sand

Sandy Silt

Explanation

W-1 — Borehole Number

Moisture Content — %w

LL PL — Liquid and Plastic Limits

Sampling (See General Notes) — Borehole Lithology

AR / BT — Borehole Termination Type

Water Level Reading at time of drilling.

Water Level Reading after drilling.

NOTES:

See Exhibit A-2 for orientation of soil profile.
See General Notes in Appendix C for symbols and soil classifications.
Soils profile provided for illustration purposes only.
Soils between borings may differ
AR - Auger Refusal
BT - Boring Termination

Project Manager: J. Schmidt	Project No.: 82175107
Drawn by: T. Hesedahl	Scale: Vert. and Horiz 1"=10'
Approved by: J. Schmidt	File Name: 82175107
Date: 4/16/2018	

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA
PH. 425-771-3304 FAX. 425-771-3549

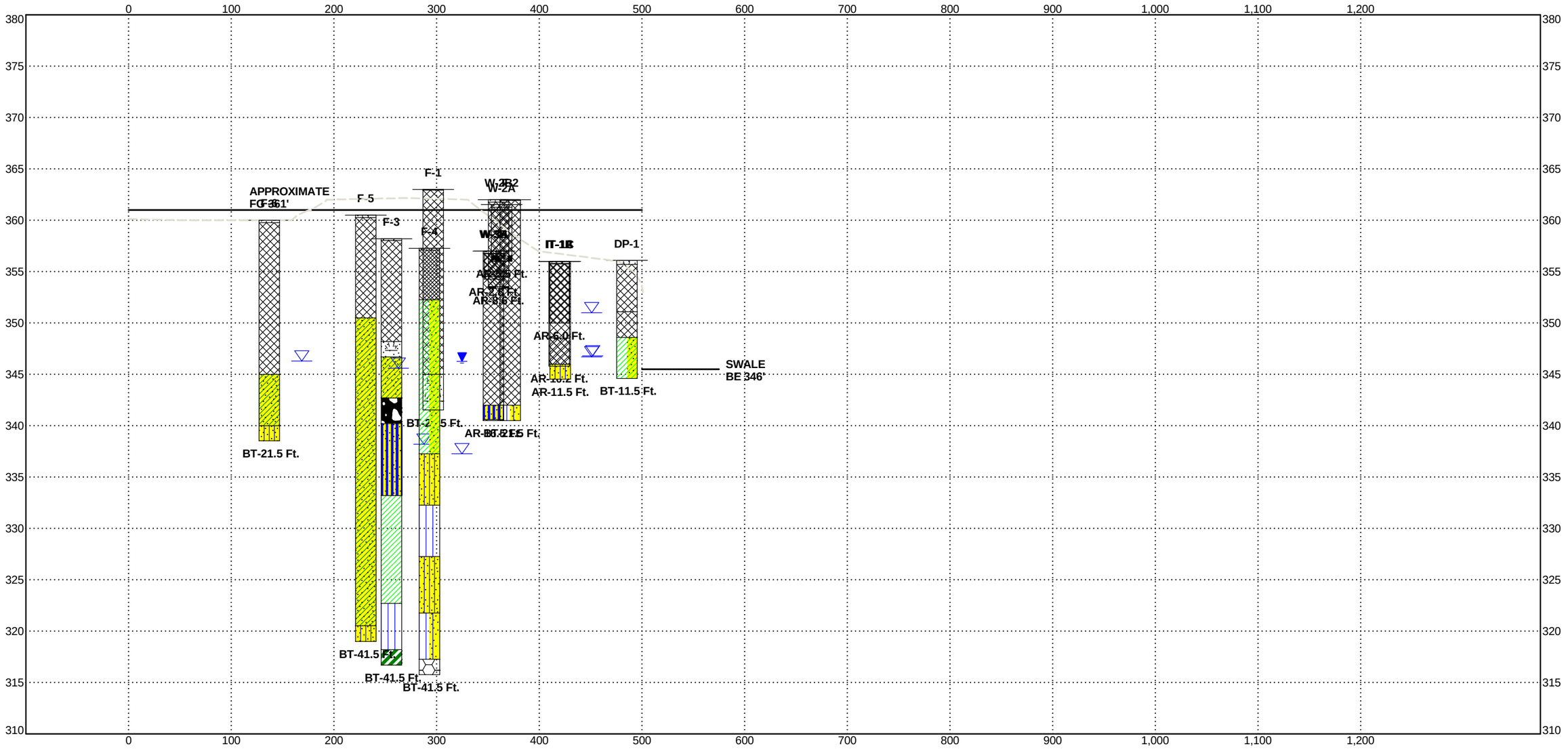
SUBSURFACE PROFILE

Section E-E'
COSTCO WAREHOUSE CW# 17-0460
KUEBLER BOULEVARD & 27TH AVENUE
SALEM, OR

EXHIBIT 7

F

F'



Explanation

F-1 — Borehole Number

Moisture Content — %w

LL PL — Liquid and Plastic Limits

Sampling (See General Notes) — Borehole Lithology

AR / BT — Borehole Termination Type

Water Level Reading at time of drilling.

Water Level Reading after drilling.

Topsoil

Fill (made ground)

Silt with Sand

Sandy Lean Clay

Boulders and Cobbles

Sandy Silt

Lean Clay

Silt

Fat Clay

Lean Clay with Sand

NOTES:

See Exhibit A-2 for orientation of soil profile.
See General Notes in Appendix C for symbols and soil classifications.
Soils profile provided for illustration purposes only.
Soils between borings may differ
AR - Auger Refusal
BT - Boring Termination

Project Manager: J. Schmidt	Project No.: 82175107
Drawn by: T. Hesedahl	Scale: horiz 1":100', vert 1"=10'
Approved by: J. Schmidt	File Name: ExhA6
Date: 4/16/2018	

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA
PH. 425-771-3304 FAX. 425-771-3549

SUBSURFACE PROFILE

Section F-F'
COSTCO WAREHOUSE CW# 17-0460
KUEBLER BOULEVARD & 27TH AVENUE
SALEM, OR

EXHIBIT 8

RETAIL PAD
23,700 SF
FFE= 365.50

RETAIL
5,900 SF
LOT 3

Clinic
7 SF
T 5

COSTCO WHOLESALE
160K MASTER FOOTPRINT
FFE= 365.00

2.8%
5.8%
1.0%
5.0%
5.7%
5.8%
6.5%

N

50 0 25 50
SCALE IN FEET

GREEN INK GRADING PLAN DATED MARCH 16, 2018 PROVIDED BY DOWL AND MODIFIED BY TERRACON CONSULTANTS, INC.

LEGEND

AREA OF 2' OVEREX BENEATH FOOTINGS

AREA OF 3' OVEREX BENEATH FOOTINGS

Project Mngr:	JMS
Drawn By:	AMP
Checked By:	TLH
Approved By:	JMS

Project No.	82175107
Scale:	AS SHOWN
File No.	Exhibit A-7
Date:	April 2018

Terracon
Consulting Engineers and Scientists
21905 64th Avenue W, Ste 100 Mountlake Terrace, WA 98043
PH. (425) 771-3304 FAX. (425) 771-3549

FOOTING OVEREXCAVATION PLAN

Costco Warehouse CW# 17-0460
Kuebler Boulevard & 27th Avenue
Salem, Oregon

EXHIBIT
A-9

Field Exploration Description

The field exploration program was executed in two phases. The first phase consisted of 49 explorations which took place in December 2017. We returned to the site in January 2018 to drill 13 additional borings for proposed retaining walls, stormwater infiltration facilities, and revised fuel station location.

The exploration locations were laid out in the field using a hand-held GPS unit. Of the 49 December 2017 explorations advanced for this project, 38 of these locations were surveyed by DOWL. Positions of the remaining exploration locations were determined with a hand-held, commercial grade GPS unit. Ground surface elevations of the un-surveyed explorations were estimated from the provided site topographic survey. The locations of the explorations and elevations should be considered accurate only to the degree implied by the means and methods used to define them.

The borings were drilled with hollow stem augers advanced by a rotary drill rig, except boring B-15 which was advanced by mud rotary drilling methods for purposes of calculating the Soil Site Class. Samples of the soil encountered in the borings were obtained using the split-barrel and thin-wall sampling procedures. The samples were tagged for identification, sealed to reduce moisture loss, and taken to the laboratory for further examination, testing, and classification. Following the completion of drilling, the borings were backfilled with bentonite chips.

An automatic SPT hammer was used to advance the split-barrel sampler in the borings performed on this site. A greater efficiency is typically achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. Published correlations between the SPT values and soil properties are based on the lower efficiency cathead and rope method. This higher efficiency affects the standard penetration resistance blow count (N) value by increasing the penetration per hammer blow over what would be obtained using the cathead and rope method. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

Vibrating wire piezometers were installed in borings F-4 and W-6. Data loggers were installed to monitor groundwater levels. The highest and lowest recorded water elevations are shown on the boring logs. Plots of the collected data are also presented in this appendix.

Field logs of the borings were prepared by Terracon's representative. The logs included visual classifications of the materials encountered as well as interpretation of the subsurface conditions between samples. The boring logs included with this report represent the engineer's interpretation of the field logs and include modifications based on laboratory evaluation of the samples. The boring locations are shown on Exhibit A-2. The boring logs are presented in Appendix A. General Notes to log terms and symbols are presented in Appendix C.

Test pits were excavated by a backhoe. The test pits were supervised and monitored by a Terracon engineer. The test pit locations are shown on Exhibit A-2. Test pit logs are presented Appendix A. Bulk surface soil samples were collected from some of the test pit excavations in order to perform various laboratory tests. These samples were collected from near-surface soils in areas anticipated to be near the design subgrade elevation.

BORING LOG NO. B-1a

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8841° Longitude: -123.0089°
Northing: 454044.395 Easting: 1350273.994

Approximate Surface Elev: 364.39 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2 **TOPSOIL**, ~2 inches of topsoil	364+/-									
SILT WITH SAND (ML), dark reddish brown, stiff				X	14	2-4-10 N=14	2.0 (HP)			
banded with tan sand				X	10	3-50/5"				
3.5	361+/-									
4.0 **POORLY GRADED SAND WITH GRAVEL (SP)**, gray, very dense, weathered boulder	360.5+/-									
Auger Refusal at 4 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:
Refusal encountered on boulder. Boring moved 3 feet west and redrilled as B-1b

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-11

BORING LOG NO. B-1b

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8841° Longitude: -123.0089°
Northing: 454044.395 Easting: 1350270.994

Approximate Surface Elev: 364 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	Pre-drill to 5 feet before sampling									
5.0	359+/-	5								
	SILT (ML), trace sand, red, tan, white and black, stiff, mottled, weak cementation, cemented in horizontal bedding planes			X	18	6-6-9 N=15	2.0 (HP)			
				X	18	2-5-10 N=15	1.5 (HP)			
		10		X	18	4-7-13 N=20				
	driller notes gravel lens between roughly 16.5 and 17.5 feet	15		X	18	3-9-19 N=28	2.0 (HP)			
20.5	343.5+/-	20								
	SANDY LEAN CLAY (CL), red, stiff, homogeneous			X	6	3-5-12 N=17	1.5 (HP)			
21.5	342.5+/-									
	Boring Terminated at 21.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:
Re-drill of B-1a

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-11

BORING LOG NO. B-2

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8841° Longitude: -123.00864°
Northing: 454050.014 Easting: 1350348.229

Surface Elev.: 363.37 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.2	363	**TOPSOIL**, ~2 inches of topsoil
		SILTY SAND (SM), trace gravel, fine grained, brown and black, medium dense
7.5	356	
		SANDY SILT (ML), brown and black, stiff
10.5	353	
		SILTY SAND WITH GRAVEL (SM), fine to medium grained, angular, black with red and yellow, loose
		medium dense
20.0	343.5	
20.7	342.5	**BASALT**, gray, free water observed in sampler
		Boring Terminated at 20.7 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)
5		18	2-4-7 N=11	
		18	2-4-7 N=11	
		18	2-4-7 N=11	2.0 (HP)
10		18	2-4-5 N=9	2.25 (HP)
15		18	2-7-9 N=16	
20		8	31-50/2"	

WATER LEVEL OBSERVATIONS: ▽ 20' While drilling; 2.6' Borehole cave in

WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 | Boring Completed: 12-06-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-12

BORING LOG NO. B-3

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88409° Longitude: -123.00814°
Northing: 454047.664 Easting: 1350477.112

Surface Elev.: 362.89 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.0	363	**TOPSOIL**, less than 1" of topsoil
		LEAN CLAY WITH SAND (CL), trace gravel, low to medium plasticity, brown to reddish brown, very stiff
5.0	358	**SILT WITH SAND (ML)**, nonplastic, brown and black, stiff to very stiff
		low plasticity
15.0	348	**SILTY SAND (SM)**, fine grained, brown and black, very dense, weak cementation
20.0	343	
20.7	342	**POORLY GRADED SAND WITH SILT (SP-SM)**, coarse to medium grained, angular, black, very dense
		Boring Terminated at 20.7 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)
		12	1-12-15 N=27	2.75 (HP)
5		18	4-5-7 N=12	2.5 (HP)
		18	1-4-6 N=10	2.75 (HP)
10		18	1-4-9 N=13	1.5 (HP)
15		18	2-14-36 N=50	
20		6	4-50/2"	

WATER LEVEL OBSERVATIONS: ▽ 20' While drilling; ▽ 7.0' At completion of drilling

ATTERBERG LIMITS: LL-PL-PI

PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 | Boring Completed: 12-06-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-13

BORING LOG NO. B-4

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88409° Longitude: -123.00736°
Northing: 454046.339 Easting: 1350677.111

Surface Elev.: 360.90 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.0	361	**TOPSOIL**, less than 1" of topsoil									
		FILL - SILT WITH SAND (ML), low plasticity, brown, very soft									
3.0	358				X	18	1-2-4 N=6	0.25 (HP)			
4.0	357	**TOPSOIL (CL)**, medium plasticity, dark brown, medium stiff, ~12 inches of relic topsoil, roots									
		LEAN CLAY WITH SAND (CL), low to medium plasticity, brown, gray and black, very stiff	5	▽	■	24					
		brown and black			X	18	3-7-11 N=18	3.75 (HP)			
10.0	351		10								
10.5	350.5	**SILTY SAND (SM)**, tan, medium dense			X	18	11-10-12 N=22	1.5 (HP)			
		SILT (ML), trace sand, low plasticity, brown, gray and black, stiff to very stiff									
15.0	346		15								
		SANDY LEAN CLAY (CL), trace gravel, low to medium plasticity, black with yellow and red, stiff			X	18	2-3-5 N=8	1.25 (HP)			
20.0	341		20	▽							
21.2	339.5	**SILTY SAND WITH GRAVEL (SM)**, subangular, yellow and brown, very dense, mottled, black gravel			X	14	26-42-50/2"				
		Boring Terminated at 21.2 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *20' While drilling*
▽ *6.7' At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017
Drill Rig: D-50 Driller: Holocene
Project No.: 82175107 Exhibit: A-14

BORING LOG NO. B-5

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88385° Longitude: -123.0091°
Northing: 453958.622 Easting: 1350227.606

Surface Elev.: 370.42 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	370	**TOPSOIL**, ~2 inches of topsoil								
		LEAN CLAY WITH SAND (CL), low to medium plasticity, reddish brown, medium stiff		X	13	2-2-3 N=5	0.75 (HP)			
			5							
					15			56		
8.0	362.5			X	18	5-5-31 N=36	3.0 (HP)			
		POORLY GRADED SAND WITH GRAVEL (SP), fine grained, gray, weathered boulder								
10.0	360.5		10	X	18	10-10-7 N=17	2.25 (HP)			
		SANDY SILT (ML), low plasticity, reddish brown and black, very stiff								
		plate like pieces of black, broken rock	15	X	8	10-14-7 N=21	2.75 (HP)			
20.0	350.5									
		SILTY SAND (SM), fine grained, reddish brown, dense, cemented laminations	20	X	16	6-19-20 N=39				
21.5	349									
		Boring Terminated at 21.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

5.2' Borehole cave in

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-04-2017 | Boring Completed: 12-04-2017

Drill Rig: D-50 | Driller: Holocene

Project No.: 82175107 | Exhibit: A-15

BORING LOG NO. B-6a

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88386° Longitude: -123.00868°
Northing: 453962.013 Easting: 1350336.174

Surface Elev.: 368.38 (Ft.)

DEPTH		ELEVATION (Ft.)
0.3	**TOPSOIL**, ~4 inches of Topsoil	368
0.9	**LEAN CLAY WITH SAND**, brown	367.5
1.0	**BOULDER**	367.5
	Auger Refusal at 1 Foot	

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:
Refusal encountered on boulder. Boring moved 5 feet west and redrilled as B-6b

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-16

BORING LOG NO. B-6b

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88386° Longitude: -123.00868°
Northing: 453962.013 Easting: 1350336.174

Surface Elev.: 368.38 (Ft.)

DEPTH	ELEVATION (Ft.)	LITHOLOGY
0.3	368	**TOPSOIL**, ~4 inches of Topsoil
		LEAN CLAY WITH SAND (CL), trace cobbles, low to medium plasticity, brown, medium stiff, blows overstated on gravel
5.0	363.5	
		SILT WITH SAND (ML), low plasticity, brown and black, very stiff
		grades to sandy silt
		stiff
15.5	353	
		SILTY SAND (SM), fine grained, gray and yellow, medium dense
		bown, gray, yellow and red, mottled
21.5	347	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
			10	3-12-16 N=28	0.75 (HP)			
5			18	5-10-12 N=22	2.0 (HP)	42		
			18	3-7-10 N=17	2.5 (HP)	41		26
10			18	3-7-7 N=14	1.5 (HP)			
15			18	4-7-8 N=15				
20			18	8-10-12 N=22				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:
Re-drill of B-6a

WATER LEVEL OBSERVATIONS

▽ *15' While drilling*

4.6' Borehole cave in

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-16

BORING LOG NO. B-7

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88387° Longitude: -123.00816°
Northing: 453965.771 Easting: 1350471.623

Surface Elev.: 365.32 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.4	365	**TOPSOIL**, ~5 inches of Topsoil
		SANDY LEAN CLAY (CL), trace cobbles, low to medium plasticity, brown, stiff
5.0	360.5	
		SILTY SAND WITH GRAVEL (SM), gray, weathered boulder
7.7	357.5	
		SILTY SAND (SM), trace gravel, brown and gray, medium dense
10.0	355.5	
		SANDY SILT (ML), low plasticity, brown and gray, stiff to very stiff, rust staining
15.0	350.5	
		SILTY SAND (SM), brown and gray, medium dense, weak cementation
17.0	348.5	
		BASALT, gray, chatter in drill indicates rock starts at ~17 feet
20.4	345	
		Boring Terminated at 20.4 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)
		10	2-4-19 N=23	1.5 (HP)
5		12	19-29-45 N=74	
		18	16-7-11 N=18	
10		18	7-8-7 N=15	1.75 (HP)
15		16	7-14-15 N=29	
20		1	50/5"	

WATER LEVEL OBSERVATIONS: None

WATER CONTENT (%): None

ATTERBERG LIMITS LL-PL-PI: None

PERCENT FINES: None

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-17

BORING LOG NO. B-8

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88383° Longitude: -123.00759°
Northing: 453953.92 Easting: 1350619.117

Surface Elev.: 362.24 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.1	362	**TOPSOIL**, ~1 inch of Topsoil									
		SILT WITH SAND (ML), low plasticity, brown, very stiff to hard			X	5	7-11-12 N=23	4.5+ (HP)			
5.0	357	**SILTY SAND (SM)**, fine grained, brown and gray, dense, rust stains	5		X	18	6-15-19 N=34				
		medium dense			X	18	8-12-13 N=25				
		fine to coarse grained, gray, red and yellow	10	▽	X	18	8-8-11 N=19				
15.0	347	**SILT WITH SAND (ML)**, nonplastic, gray, very stiff, rust stains	15		X	18	6-8-12 N=20	2.5 (HP)			
17.0	345										
17.4	345	**BEDROCK**, gray			X	1	50/5"				
		Auger Refusal at 17.4 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10' While drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-05-2017 | Boring Completed: 12-05-2017

Drill Rig: D-50 | Driller: Holocene

Project No.: 82175107 | Exhibit: A-18

BORING LOG NO. B-9a

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88394° Longitude: -123.00717°
Northing: 453995.121 Easting: 1350727.495

Surface Elev.: 361.48 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.1	361.5	**FILL - TOPSOIL**, topsoil < 1".
		FILL - SILTY SAND (SM), brown to reddish brown, medium dense, black laminations
7.5	354	
		FILL - SANDY SILT (ML), low to medium plasticity, black,gray and red brown, very stiff, heterogeneous
10.0	351.5	
		SILTY SAND (SM), trace gravel, brown, dense
15.0	346.5	
15.4	346	**BEDROCK**
		Auger Refusal at 15.4 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)
		18	4-8-9 N=17	
5		18	4-18-13 N=31	
		16	8-11-12 N=23	2.25 (HP)
10		14	21-18-14 N=32	
15		0	50/5"	

WATER LEVEL OBSERVATIONS

ATTERBERG LIMITS: LL-PL-PI

WATER CONTENT (%)

PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:
Refusal encountered on possible boulder or bedrock. Boring moved 10 feet south and redrilled as B-9b

WATER LEVEL OBSERVATIONS

Groundwater not observed

6.7' After 24 hours

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-04-2017 Boring Completed: 12-04-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-19

BORING LOG NO. B-9b

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88392° Longitude: -123.00717°
Northing: 453986.307 Easting: 1350727.537

Surface Elev.: 361.37 (Ft.)

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		Predrill 17' before sampling								
17.0	344.5									
17.1	344.5	**BEDROCK**			0	50/1"				
		Auger Refusal at 17.1 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:
Re-drill of B-9a

WATER LEVEL OBSERVATIONS

Groundwater not observed

10.1' After 24 hours

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-04-2017 | Boring Completed: 12-04-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-19

BORING LOG NO. B-10

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88356° Longitude: -123.0087°
Northing: 453851.892 Easting: 1350331.999

Surface Elev.: 367.44 (Ft.)

DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	367	**TOPSOIL**, ~3 inches of topsoil									
		SANDY SILT (ML), low plasticity, brown, black and gray, very stiff, mottled			X	18	3-8-9 N=17	2.25 (HP)			
5.0	362.5										
		SILTY SAND (SM), fine grained, brown and gray, medium dense, rust stains	5		X	18	3-8-12 N=20		49	NP	50
7.5	360										
		SANDY SILT (ML), low plasticity, brown and black, stiff			X	18	3-5-7 N=12	2.25 (HP)			
10.5	357		10		X	10	2-50/5"	1.75 (HP)			
11.5	356	**COBBLE**, gray									
		SANDY SILT (ML), brown, observed in cuttings									
15.0	352.5		15		X	0	5-6-10 N=16				
		POORLY GRADED GRAVEL (GP), medium dense, material type assumed based on drilling action		▽							
20.0	347.5		20		X	1	14-50/5"				
20.4	347	**BEDROCK**, gray and black									
		Boring Terminated at 20.4 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *20' While drilling*

8.7' Borehole cave in

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-20

BORING LOG NO. B-11

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8836° Longitude: -123.00769°
Northing: 453867.174 Easting: 1350595.324

Surface Elev.: 367.50 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		TOPSOIL, ~36 inches of topsoil									
3.0	364.5										
		COBBLE			X	4	3-5-12 N=17				
4.0	363.5										
		SANDY SILT (ML), low plasticity, brown, black and gray stiff	5		X	18	6-10-9 N=19	1.25 (HP)			
7.5	360										
		COBBLE, gray			X	0.5	12-16-19 N=35				
10.0	357.5		10								
		SILT WITH SAND (ML), low plasticity, brown, stiff			X	6	4-6-6 N=12				
15.0	352.5										
		SANDY LEAN CLAY (CL), low to medium plasticity, dark brown with yellow and red, stiff, mottled	15		X	18	2-3-2 N=5	1.5 (HP)			
20.0	347.5										
20.2	347.5	**BEDROCK**, gray	20		X	2	50/2"				
		Boring Terminated at 20.2 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

10.9' Borehole cave in

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-21

BORING LOG NO. B-12

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8837° Longitude: -123.00717°
Northing: 453906.732 Easting: 1350728.895

Surface Elev.: 363.18 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
0.1	363				
TOPSOIL, <1 inch of topsoil					
SILTY SAND (SM), fine grained, light brown to reddish brown, medium dense					
				6	7-12-12 N=24
brown and black		5		18	2-7-11 N=18
				18	4-8-14 N=22
10.0	353				
POSSIBLE COBBLE OR BEDROCK, gray and brown		10		16	16-26-50/4"
12.1	351			0.5	50/1"
Auger Refusal at 12.1 Feet					

WATER LEVEL OBSERVATIONS | LABORATORY HP (tsf) | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-05-2017 | Boring Completed: 12-05-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-22

BORING LOG NO. B-13

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88357° Longitude: -123.00909°
Northing: 453855.725 Easting: 1350230.943

Surface Elev.: 367.89 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	367.5	**TOPSOIL**, ~2 inches of topsoil									
		SANDY SILT (ML), low plasticity, brown and gray, very stiff, rust stains			X	18	4-5-10 N=15	3.0 (HP)			
5.0	363	**SANDY LEAN CLAY (CL)**, low to medium plasticity, gray, black and red, very stiff, mottled	5		X	18	6-13-12 N=25	4.5+ (HP)	36		55
					X	18	3-8-9 N=17	2.0 (HP)			
10.0	358	**SILT WITH SAND (ML)**, low plasticity, brown, stiff	10		X	18	3-5-7 N=12	2.75 (HP)			
		grades to sandy, very stiff	15		X	18	3-10-15 N=25	4.5+ (HP)			
		grades brown, red and yellow, medium stiff	20	▽	X	18	2-2-4 N=6	0.75 (HP)			
21.5	346.5	***Boring Terminated at 21.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *21' While drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 | Boring Completed: 12-06-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-23

BORING LOG NO. B-14

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8834° Longitude: -123.0088°
Northing: 453800 Easting: 1350280

Approximate Surface Elev: 366 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)
		TOPSOIL, ~36 inches of topsoil				
3.0	363+/-					
		SANDY SILT (ML), nonplastic, gray and red, very stiff to hard, laminated, ~1/8" lamination	X	6	0-1-1 N=2	0.25 (HP)
			X	16	2-12-16 N=28	4.5+ (HP)
		grades to low plastic, brown and gray, very stiff, rust stains	X	18	7-13-8 N=21	2.5 (HP)
		black laminations	X	18	7-8-5 N=13	2.0 (HP)
			X	18	2-8-13 N=21	2.5 (HP)
20.0	346+/-					
		LEAN CLAY WITH SAND (CL), medium plasticity, yellow, very stiff, homogeneous	X	18	2-6-7 N=13	2.75 (HP)
21.5	344.5+/-					
		Boring Terminated at 21.5 Feet				

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
5				
10				
15				
20				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-24

BORING LOG NO. B-15

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8834° Longitude: -123.0082°
Northing: 453795 Easting: 1350465

Approximate Surface Elev: 366 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.1	366+/-	**TOPSOIL**, ~1 inch of topsoil
		SILTY SAND (SM), trace gravel, brown, black and gray, loose
		medium dense
		grades gray and brown, very dense, weak cementation
15.0	351+/-	
		SANDY SILT (ML), low plasticity, reddish brown to red, and yellow, very stiff
		grades gray with red and yellow, stiff
25.0	341+/-	

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		14	1-3-4 N=7				
5		18	4-3-4 N=7		54	NP	43
		18	11-13-10 N=23				
10		18	31-41-28 N=69				
15		18	10-11-13 N=24	2.0 (HP)			
20		18	6-4-5 N=9	1.5 (HP)			
		18					
25							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud Rotary - Tri-Cone Cutting Head

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed due to mud rotary methods

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-05-2017 | Boring Completed: 12-05-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-25

BORING LOG NO. B-15

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8834° Longitude: -123.0082°
Northing: 453795 Easting: 1350465

Approximate Surface Elev: 366 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
SILTY SAND (SM), brownish gray with yellow, black and green, very dense, mottled, weak cementation					18	16-25-39 N=64				
grades brownish gray with black, moderate cementation		30			18	25-36-31 N=67				
35.0	331+/-	35								
SILT WITH SAND (ML), low plasticity, yellow and black, soft					18	3-6-45 N=51	0.5/ 4.5+			
grades brown to dark gray, hard, blocky										
40.0	326+/-	40								
BEDROCK, gray					1	50/2"				
44.1	322+/-									
Auger Refusal at 44.1 Feet					0	50/1"				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud Rotary - Tri-Cone Cutting Head

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed due to mud rotary methods

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-05-2017 | Boring Completed: 12-05-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-25

BORING LOG NO. B-16

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8834° Longitude: -123.00752°
Northing: 453797.257 Easting: 1350639.388

Surface Elev.: 362.86 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.6	362.5	**TOPSOIL**, ~7 inches of topsoil
		SANDY SILT (ML), low plasticity, brown and gray, stiff
8.0	355	
		SANDY LEAN CLAY (CL), low to medium plasticity, red and yellow, stiff, mottled
15.0	348	
		SILT WITH SAND (ML), low plasticity, yellow, olive green and red, stiff
20.0	343	
		SILTY SAND WITH GRAVEL (SM), gray, red and yellow, medium dense, stratified, 4 - 6" thick strata
21.5	341.5	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		18	2-4-5 N=9	4.5+ (HP)			
5		22					
		18	10-8-7 N=15	1.75 (HP)			
10		18	2-4-6 N=10	2.25 (HP)			
15		18	3-4-5 N=9	1.5 (HP)			
20		18	6-4-6 N=10				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

15' While drilling
7.1' At completion of drilling

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-05-2017 Boring Completed: 12-05-2017
Drill Rig: D-50 Driller: Holocene
Project No.: 82175107 Exhibit: A-26

BORING LOG NO. B-17

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88334° Longitude: -123.00715°
Northing: 453775.093 Easting: 1350734.114

Surface Elev.: 364.11 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.2	364	**TOPSOIL**, ~2 inches of topsoil
		FILL - LEAN CLAY WITH SAND (CL), low to medium plasticity, brown and gray, stiff
		very stiff
		trace gravel, bits of straw observed in sample
10.0	354	
		SANDY LEAN CLAY (CL), low to medium plasticity, brown, yellow, red and black, stiff
15.0	349	
		SILTY SAND (SM), gray with yellow and red, medium dense
		trace gravel
21.5	342.5	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		18	2-3-6 N=9	2.0 (HP)			
5							
		18	4-8-10 N=18	3.25 (HP)			
		18	4-7-8 N=15	3.25 (HP)			
10							
		18	2-4-5 N=9	2.75 (HP)			
15							
		18	5-6-8 N=14				
20							
		18	8-12-8 N=20				

WATER LEVEL OBSERVATIONS: ▽ 15' While drilling; ▽ 7.6' At completion of drilling

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-05-2017 Boring Completed: 12-05-2017
Drill Rig: D-50 Driller: Holocene
Project No.: 82175107 Exhibit: A-27

BORING LOG NO. B-18

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8832° Longitude: -123.0092°
Northing: 453710 Easting: 1350220

Approximate Surface Elev: 361 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.8	360+/-	**TOPSOIL**, ~10 inches
		SILT WITH SAND (ML), low plasticity, red and yellow, stiff
7.0	354+/-	
		SILTY SAND (SM), red brown and yellow, loose to medium dense
		grades fine to coarse
11.0	350+/-	
		SANDY SILT (ML), low plasticity, reddish brown, stiff
		brown to reddish-yellow
		grades gray-brown with thin yellow strata
21.5	339.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		18	2-3-4 N=7	2.0 (HP)			
5		22					
		18	4-5-6 N=11	2.0 (HP)			
10		18	5-6-7 N=13				
15		18	4-9-10 N=19	3.0 (HP)			
20		18	5-11-9 N=20	2.5 (HP)			

WATER LEVEL OBSERVATIONS: ▽ 6.8' at 90 Minutes

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

▽ *6.8' at 90 Minutes*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-04-2017 Boring Completed: 12-04-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-28

BORING LOG NO. B-19

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8832° Longitude: -123.0085°
Northing: 453710 Easting: 1350375

Approximate Surface Elev: 364 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	364+/-	**TOPSOIL**, ~3 inches of topsoil									
		LEAN CLAY WITH GRAVEL (CL), low to medium plasticity, light brown to brown, stiff			X	18	2-3-5 N=8	2.0 (HP)			
		grades sandy	5	▽	X	18	2-3-5 N=8	1.75 (HP)			
7.5	356.5+/-				X	18	3-5-8 N=13	3.5 (HP)			
		FAT CLAY WITH SAND (CH), medium to high plasticity, red and yellow, stiff to very stiff, mottled	10		X	18	3-5-8 N=13	2.0 (HP)			
		grades to yellow, homogenous									
15.0	349+/-		15	▽	X	18	3-5-8 N=13				
		SILTY SAND (SM), fine grained, brown with black and green, medium dense, mottled									
		fine to coarse grained, brown, black, gray and yellow	20		X	18	5-11-8 N=19				
21.5	342.5+/-										
		Boring Terminated at 21.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *15' While drilling*
▽ *6.6' At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-05-2017 Boring Completed: 12-05-2017
Drill Rig: D-50 Driller: Holocene
Project No.: 82175107 Exhibit: A-29

BORING LOG NO. B-20

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8832° Longitude: -123.0076°
Northing: 453710 Easting: 1350615

Approximate Surface Elev: 362 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	STRATIGRAPHIC DESCRIPTION
0.3	362+/-	**TOPSOIL**, ~3 inches of topsoil
		FILL - SILT WITH SAND (ML), low plasticity, brown, medium stiff to stiff
5.5	356.5+/-	**SILT WITH SAND (ML)**, low plasticity, grayish brown, soft, rootlets observed, possible relic topsoil
7.5	354.5+/-	**LEAN CLAY WITH SAND (CL)**, low to medium plasticity, gray, brown, red and black, very stiff
		grades sandy
15.0	347+/-	**SILTY SAND (SM)**, fine grained, gray, brown and black, medium dense
		grades dense
21.0	341+/-	
21.5	340.5+/-	**SANDY SILT (ML)**, nonplastic, gray and yellow, very hard
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
			18	1-3-3 N=6	1.75 (HP)			
5	▽		18	1-3-2 N=5	2.0/ 0.50			
			18	7-11-16 N=27	2.5 (HP)			
10			18	8-8-11 N=19	2.75 (HP)			
	▽							
15			18	4-8-12 N=20				
20			18	5-17-41 N=58				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *15' While drilling*
▽ *5.5' At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-05-2017 | Boring Completed: 12-05-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-30

BORING LOG NO. B-21

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88315° Longitude: -123.00717°
Northing: 453704.441 Easting: 1350730.693

Surface Elev.: 360.97 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.3	360.5									
		TOPSOIL, Topsoil - 3.5 inches									
		SILT WITH SAND (ML), soft to medium stiff									
					X	12	3-5-11 N=16	0.25 (HP)			
		grades reddish brown, rock in sampler tip, blows possibly overstated	5	▽	X	12	4-5-7 N=12	0.5 (HP)			
	7.5	353.5		▽							
		SILTY SAND (SM), fine to medium grained, brown,gray,yellow and black, medium dense, heterogeneous, rock in sampler tip, blows possibly overstated			X	18	3-4-6 N=10	1.5 (HP)			
		free water in sampler, shelby tube collapsed during sampling due to buried obstruction (probable boulder or cobble)	10		■	12					
					X	18	5-5-7 N=12				
	15.0	346	15								
		SANDY SILT (ML), trace gravel, brown and black, stiff, black faces appear slickensided			X	18	4-6-10 N=16	3.75 (HP)			
	21.5	339.5	20		X	18	3-5-6 N=11				
		Boring Terminated at 21.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *7.5' While drilling*
▽ *5.8' At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-04-2017 | Boring Completed: 12-04-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-31

BORING LOG NO. F-1

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8848° Longitude: -123.0059°
Northing: 454330 Easting: 1350965

Approximate Surface Elev: 363 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.1	363+/-								
TOPSOIL, ~1 inch of topsoil									
FILL - SANDY LEAN CLAY (CL), trace gravel, low to medium plasticity, brown and black, very stiff, black faces appear slickensided			X	16	3-5-6 N=11	3.25 (HP)			
		5	X	12	2-6-6 N=12	2.5 (HP)			
stiff			X	12	2-4-4 N=8	1.75 (HP)			
very stiff		10	X	12	5-6-7 N=13	2.5 (HP)			
		15	■	23					
18.0	345+/-		X	16	4-4-4 N=8	2.5/ 0.50			
SANDY SILT (ML), low plasticity, gray and dark brown, soft, rootlets, possible relic topsoil		20	X	18	2-3-2 N=5	1.0 (HP)			
21.5	341.5+/-								
Boring Terminated at 21.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-32

BORING LOG NO. F-2

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8848° Longitude: -123.0062°
Northing: 454330 Easting: 1351040

Approximate Surface Elev: 362 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.1 **TOPSOIL**, ~1 inch of topsoil	362+/-								
FILL - LEAN CLAY WITH SAND (CL), low to medium plasticity, brown, very stiff			X	16	3-5-9 N=14	3.25 (HP)			
		5	X	14	3-5-8 N=13	2.5 (HP)			
dark brown			X	14	3-5-7 N=12	3.25 (HP)			
from 10 to 15 feet cuttings indicate no change in material		10	X	1	2-10-12 N=22				
		15	X	0	4-4-8 N=12				
20.0	342+/-	20							
SILT WITH SAND (ML), low plasticity, brown, black and yellow, very stiff			X	18	2-5-8 N=13	3.0 (HP)			
21.5	340.5+/-								
Boring Terminated at 21.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-33

BORING LOG NO. F-3

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88462° Longitude: -123.0064°
Northing: 454242.43 Easting: 1350924.463

Surface Elev.: 358.18 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.2	358	**TOPSOIL**, ~2 inches of topsoil
		FILL - LEAN CLAY (CL), trace sand, low to medium plasticity, brown, light brown and black, stiff, black faces appear slickensided
		very stiff
10.0	348	
11.5	346.5	**LEAN CLAY (CL)**, trace sand, medium plasticity, dark brown, very soft, possible relic topsoil
		SANDY LEAN CLAY (CL), low to medium plasticity, brown
15.5	342.5	
		BOULDER, gray, ~2.5' thick based on drilling action
18.0	340	
		SANDY SILT (ML), nonplastic, brown, stiff
25.0	333	

DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	14	2-4-6 N=10	1.75 (HP)			
5	2	4-8-7 N=15				
	18	3-5-8 N=13	2.75 (HP)			
10	18	0-0-0 N=0	0.5 (HP)			
15	4	17-50/2"				
20	14	9-5-3 N=8	1.5 (HP)			
25						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

20' While drilling
8.8' At completion of drilling

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 | Boring Completed: 12-07-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-34

BORING LOG NO. F-3

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88462° Longitude: -123.0064°
Northing: 454242.43 Easting: 1350924.463

Surface Elev.: 358.18 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, low to medium plasticity, red, yellow and brown, stiff, mottled			X	18	2-3-5 N=8	2.5 (HP)			
	grades to yellow and red, medium stiff to stiff	30		X	18	0-2-2 N=4	1.25 (HP)			
35.5	322.5	35		X	18	0-1-1 N=2	1.0 (HP)			
	SILT (ML), trace sand, low plasticity, gray, soft									
40.0	318	40		X	18	0-0-1 N=1	0.25 (HP)			
	FAT CLAY (CH), medium to high plasticity, white and gray, very soft									
41.5	316.5									
	Boring Terminated at 41.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

20' While drilling
8.8' At completion of drilling

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 | Boring Completed: 12-07-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-34

BORING LOG NO. P-1

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88459° Longitude: -123.00964°
Northing: 454226.65 Easting: 1350086.388

Surface Elev.: 366.77 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2 **TOPSOIL**, ~2 inches of topsoil	366.5									
1.0 **FILL - SILT WITH GRAVEL (ML)**, low to medium plasticity, brown, stiff	366			X	12	3-3-5 N=8				
SILT (ML), low plasticity, reddish brown, stiff, weak cementation										
				X	16	3-7-7 N=14				
		5		X	16	5-6-8 N=14	1.0 (HP)			
driller notes gravel very stiff				X	15	3-13-14 N=27	2.0 (HP)			
		10		X	14	4-16-50/2"	2.0 (HP)			
11.2 hard, strong cementation, cemented zones of black and brown foliated material	355.5									
Boring Terminated at 11.2 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-36

BORING LOG NO. P-2a

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88482° Longitude: -123.00889°
Northing: 454310.129 Easting: 1350279.539

Surface Elev.: 363.76 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.2	363.5									
		TOPSOIL, ~2 inches of topsoil									
	1.5	362.5			X	14	8-4-4 N=8	1.5 (HP)			
		SANDY SILT WITH GRAVEL (ML), low plasticity, reddish brown, stiff, gravel composed of dark brown to black cemented material									
		Auger Refusal at 1.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:
Refusal encountered on possible boulder or bedrock. Boring moved 6 feet west and redrilled as P-2b

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-37

BORING LOG NO. P-2b

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88482° Longitude: -123.00889°
Northing: 454310.129 Easting: 1350279.539

Surface Elev.: 363.76 (Ft.)

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)
		Predrill 2.5' before sampling				
2.5	361.5					
3.0	361	**SANDY SILT WITH GRAVEL (ML)**, low plasticity, brown, stiff		6	5-33-40 N=73	
		BOULDER, gray		12		
5.0	359		5			
5.9	358	**SILT WITH SAND (ML)**, trace gravel, low plasticity, reddish brown, stiff		11	2-50/5"	2.0 (HP)
		Auger Refusal at 5.9 Feet				

WATER LEVEL OBSERVATIONS, SAMPLE TYPE, WATER CONTENT (%), ATTERBERG LIMITS (LL-PL-PI), PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:
Re-drill of P-2a

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 | Boring Completed: 12-06-2017
Drill Rig: CME 75 | Driller: Steadfast Services
Project No.: 82175107 | Exhibit: A-37

BORING LOG NO. P-3

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88503° Longitude: -123.00835°
Northing: 454387.041 Easting: 1350419.166

Surface Elev.: 362.84 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.2	362.5									
	TOPSOIL, ~2 inches of topsoil										
	LEAN CLAY WITH GRAVEL (CL), low to medium plasticity, brown and black, stiff, black faces appear slickensided				X	14	4-4-7 N=11	3.0 (HP)			
	2.5	360.5									
	SANDY LEAN CLAY (CL), trace gravel, low to medium plasticity, dark tan, brown and black, very stiff, black faces appear slickensided				X	18	7-17-16 N=33	3.5 (HP)			
			5		X	18	6-12-14 N=26	3.5 (HP)			
					X	13	6-6-28 N=34				
	9.0	354									
	BEDROCK, gray, drilling action indicates hard materials at 9 feet										
	10.4	352.5	10		X	6	50/5"				
	Boring Terminated at 10.4 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-38

BORING LOG NO. P-4

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88506° Longitude: -123.00729°
Northing: 454401.143 Easting: 1350694.43

Surface Elev.: 360.54 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.3	360									
	TOPSOIL, ~4 inches of topsoil										
	FILL - LEAN CLAY WITH SAND (CL), low to medium plasticity, brown to dark brown, stiff				X	14	1-5-6 N=11	2.5 (HP)			
			5		X	12	3-3-11 N=14	2.25 (HP)			
	7.5	353									
	LEAN CLAY WITH SAND (CL), low to medium plasticity, dark brown, medium stiff, possible relic topsoil				X	10	1-2-3 N=5	1.0 (HP)			
	grades to brown, very stiff		10		X	18	7-17-9 N=26	3.25 (HP)			
	11.5	349									
	Boring Terminated at 11.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-39

BORING LOG NO. P-5

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88441° Longitude: -123.00899°
Northing: 454162.148 Easting: 1350255.463

Surface Elev.: 363.43 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.1	363.5								
TOPSOIL, ~1 inches of topsoil									
SILT (ML), low plasticity, reddish brown and black, stiff, black faces appear slickensided			X	16	2-2-7 N=9	2.0 (HP)			
			X	16	3-9-5 N=14	3.5 (HP)			
		5							
6.0	357.5		X	16	6-7-12 N=19	2.0 (HP)			
SANDY SILT (ML), low plasticity, reddish brown and gray, very stiff, laminated, ~1/8 inch thick lamination of reddish brown silt and gray sand									
			X	18	8-9-14 N=23	3.0 (HP)			
10.5	353	10							
SILT (ML), low plasticity, reddish brown and black, very stiff, black faces appear slickensided			X	18	4-7-11 N=18				
11.5	352								
Boring Terminated at 11.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-40

BORING LOG NO. P-6

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8845° Longitude: -123.0084°
Northing: 454205 Easting: 1350405

Approximate Surface Elev: 362 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.2	362+/-	**TOPSOIL**, ~2 inches of topsoil
		SILT WITH SAND (ML), low plasticity, reddish brown, very stiff
		stiff
		very stiff
6.0	356+/-	
		BOULDER, gray
7.5	354.5+/-	
8.0	354+/-	**SILT (ML)**, low plasticity, reddish brown and black, very stiff, black faces appear slickensided
		BOULDER, gray
10.0	352+/-	
		SILT (ML), low plasticity, reddish brown and black, very stiff, black faces appear slickensided
11.5	350.5+/-	
		Boring Terminated at 11.5 Feet

DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	14	4-5-12 N=17	2.0 (HP)			
	18	3-4-7 N=11	1.0 (HP)			
5	18	2-8-26 N=34	2.0 (HP)			
	10	18-50/5"				
10	18	3-6-6 N=12	2.5 (HP)			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-41

BORING LOG NO. P-7

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8844° Longitude: -123.0075°
Northing: 454210 Easting: 1350585

Approximate Surface Elev: 361 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	361+/-							
TOPSOIL, ~2 inches of topsoil								
SILT (ML), trace sand, low plasticity, reddish brown, stiff, tan sand lenses			15	3-5-7 N=12	3.75 (HP)			
drilling action indicates cobble			12	4-6-5 N=11	2.0 (HP)			
brown and black, very stiff, black faces appear slickensided		5	16	4-6-14 N=20	3.25 (HP)			
laminated, ~1/8 inch thick laminations of reddish brown silt and black cemented gravel			18	3-6-8 N=14	3.25 (HP)			
		10	18	3-6-8 N=14	2.0 (HP)			
11.5	349.5+/-							
Boring Terminated at 11.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-42

BORING LOG NO. P-8

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8842° Longitude: -123.0066°
Northing: 454125 Easting: 1350845

Approximate Surface Elev: 358 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.2	358+/-	**TOPSOIL**, ~2 inches of topsoil
		SANDY SILT (ML), nonplastic, light brown to brown, stiff
		low plasticity
8.0	350+/-	
		SILT (ML), trace sand, low plasticity, dark brown and yellow, stiff
11.5	346.5+/-	
		Boring Terminated at 11.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		18	2-5-16 N=21	1.75 (HP)			
5							
		18	1-3-4 N=7	2.0 (HP)			
		18	7-8-10 N=18	1.5 (HP)			
10							
		18	2-4-8 N=12	1.5 (HP)			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-43

BORING LOG NO. P-9

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88401° Longitude: -123.00555°
Northing: 454021.44 Easting: 1351148.246

Surface Elev.: 357.27 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	357								
TOPSOIL, ~3 inches of topsoil									
FILL - SILTY SAND (SM), fine grained, light brown, brown and black, medium dense, weak cementation, black faces appear slickensided			X	16	2-6-9 N=15				
5.0	352.5	5							
FILL - SANDY SILT (ML), nonplastic, brown and black, stiff, black faces appear slickensided			X	16	2-5-5 N=10	1.5 (HP)			
8.0	349.5								
LEAN CLAY (CL), trace sand, medium plasticity, dark brown, medium stiff, roots, possible relic topsoil low to medium plasticity, brown and dark brown			X	16	1-3-2 N=5	0.75 (HP)			
		10							
11.5 red and yellow	346		X	18	1-2-3 N=5	1.0 (HP)			
Boring Terminated at 11.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 | Boring Completed: 12-07-2017

Drill Rig: D-50 | Driller: Holocene

Project No.: 82175107 | Exhibit: A-44

BORING LOG NO. P-10

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8839° Longitude: -123.0062°
Northing: 454000 Easting: 1350955

Approximate Surface Elev: 362 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.2	362+/-	**TOPSOIL**, ~2 inches of topsoil
		SILT (ML), low plasticity, dark reddish brown, very stiff
		trace sand and gravel, light reddish brown, stiff, pockets of light tan sand and gravel
9.0	353+/-	
		BOULDER, gray
10.0	352+/-	
		SILT (ML), dark brown, stiff
11.5	350.5+/-	
		Boring Terminated at 11.5 Feet

DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	14	6-7-16 N=23	4.0 (HP)			
	14	4-7-5 N=12	3.5 (HP)			
5						
	15	5-7-5 N=12	2.0 (HP)			
	4	5-7-7 N=14				
10	16	6-5-6 N=11	1.75 (HP)			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 | Boring Completed: 12-07-2017
Drill Rig: CME 75 | Driller: Steadfast Services
Project No.: 82175107 | Exhibit: A-45

BORING LOG NO. P-11

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88362° Longitude: -123.00659°
Northing: 453879.207 Easting: 1350879.076

Surface Elev.: 364.80 (Ft.)

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2 **TOPSOIL**, ~2 inches of topsoil	364.5									
SILT (ML), trace gravel, low plasticity, brown and black, very stiff, black faces appear slickensided				X	16	9-9-18 N=27	3.75 (HP)			
				X	14	4-6-6 N=12	3.0 (HP)			
		5								
				X	15	4-6-9 N=15	3.25 (HP)			
pockets of light tan sand and gravel										
				X	15	4-8-8 N=16	3.5 (HP)			
		10								
				X	15	4-10-12 N=22	3.5 (HP)			
11.5	353.5									
Boring Terminated at 11.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-46

BORING LOG NO. P-12

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8832° Longitude: -123.006°
Northing: 453720 Easting: 1351000

Approximate Surface Elev: 364 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	364+/-							
TOPSOIL, ~2 inches of topsoil								
SILT (ML), dark brown and black, very stiff, black faces appear slickensided			14	2-6-9 N=15	3.5 (HP)			
reddish brown with gravel			14	5-8-7 N=15	3.5 (HP)			
stiff		5	15	2-4-9 N=13	1.5 (HP)			
8.0	356+/-		15	3-7-9 N=16	1.5 (HP)			
SANDY LEAN CLAY (CL), dark tan, stiff								
yellow, reddish brown and black, stiff, mottled, black faces appear slickensided		10	16	6-7-9 N=16	1.75 (HP)			
11.5	352.5+/-							
Boring Terminated at 11.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-06-2017 Boring Completed: 12-06-2017

Drill Rig: CME 75 Driller: Steadfast Services

Project No.: 82175107 Exhibit: A-47

BORING LOG NO. P-13

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8831° Longitude: -123.00669°
Northing: 453689.296 Easting: 1350853.522

Surface Elev.: 360.91 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.2	360.5	**TOPSOIL**, ~2 inches of topsoil
		FILL - SANDY LEAN CLAY (CL), low to medium plasticity, light brown to brown, stiff
6.0	355	
6.5	354.5	**LEAN CLAY WITH SAND (CL)**, trace organics, medium plasticity, dark brown, soft, roots, possible relic topsoil (~6 inches)
		LEAN CLAY WITH SAND (CL), low to medium plasticity, brown, medium stiff
10.0	351	
		SILT (ML), low plasticity, brown, yellow and black, soft, mottled
11.5	349.5	
		Boring Terminated at 11.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		18	1-2-5 N=7	1.5 (HP)			
5							
		14	1-4-8 N=12	2.0/ 0.5			
		18	1-2-3 N=5	0.75 (HP)			
10							
		18	1-1-1 N=2	0.5 (HP)			

WATER LEVEL OBSERVATIONS

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-48

BORING LOG NO. DP-1

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8847° Longitude: -123.00552°
Northing: 454274.732 Easting: 1351153.641

Surface Elev.: 356.07 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	0.4	355.5									
	TOPSOIL, ~5 inches of topsoil										
	SANDY SILT (ML), nonplastic, brown and light brown, stiff				X	16	1-4-4 N=8	1.5 (HP)			
	5.0	351									
	LEAN CLAY WITH SAND (CL), medium plasticity, brown and dark brown, stiff		5		X	16	1-3-6 N=9	2.0 (HP)			
	7.5	348.5									
	LEAN CLAY WITH SAND (CL), medium plasticity, brown, stiff				X	10	0-3-4 N=7	2.0 (HP)			
			10		X	12	3-3-4 N=7	2.5 (HP)	33		78
	11.5	344.5									
	Boring Terminated at 11.5 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 bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-49

BORING LOG NO. DP-2

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.88359° Longitude: 123.00571°
Northing: 453869.163 Easting: 1351105.929

Surface Elev.: 361.48 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.4	361	**TOPSOIL**, ~5 inches of topsoil
		SILT WITH SAND (ML), trace gravel, low plasticity, brown and gray, stiff, fragments of gray cobbles in sampler
8.5	353	**LEAN CLAY (CL)**, trace sand, medium plasticity, dark brown and gray, stiff, roots, possible relic topsoil
		low to medium plasticity, brown
11.5	350	***Boring Terminated at 11.5 Feet***

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)
	X	12	2-5-6 N=11	
5				
	X	16	2-6-6 N=12	1.5 (HP)
	X	10	3-5-5 N=10	2.0 (HP)
10				
	X	18	4-6-7 N=13	2.0 (HP)

WATER LEVEL OBSERVATIONS

ATTERBERG LIMITS: LL-PL-PI

WATER CONTENT (%)

PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 Boring Completed: 12-07-2017

Drill Rig: D-50 Driller: Holocene

Project No.: 82175107 Exhibit: A-50

BORING LOG NO. IT-1A

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8846° Longitude: -123.0058°
Northing: 454237.63 Easting: 1351087.65

Approximate Surface Elev: 356 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	356+/-										
TOPSOIL, 3 inches											
FILL - SANDY LEAN CLAY (CL), trace organics, brown with black spotting, stiff				▽		10	2-3-6 N=9				
				▽							
with gravel, brown and dark brown, highly weathered gravel			5			15	12-20-12 N=32				
6.0	350+/-										
Auger Refusal 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*
▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-30-2018 | Boring Completed: 01-30-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-60

BORING LOG NO. IT-1B

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8846° Longitude: -123.0058°
Northing: 454242 Easting: 1351087.65

Approximate Surface Elev: 356 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	FILL - , Drilled to 7.5 feet before sampling.									
7.5	348.5+/-									
	FILL - SANDY LEAN CLAY (CL), trace organics, brown with black spotting, trace rootlets				13	3-4-5 N=9				
10.0	346+/-									
10.2	no recovery				0	50/2"				
	Auger Refusal at 10.2 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

While drilling
After One Day

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-30-2018 | Boring Completed: 01-30-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-61

BORING LOG NO. IT-1C

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8845° Longitude: -123.0058°
Northing: 454212.05 Easting: 1351088.67

Approximate Surface Elev: 356 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.3	356+/-	**TOPSOIL**, 3 inches
		FILL - SANDY LEAN CLAY (CL), brown with black spotting, medium stiff
10.0	346+/-	
		SILTY SAND (SM), light brown
11.5	344.5+/-	
		Auger Refusal at 11.5 Feet

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
5	▽							
			15	2-4-3 N=7				
	▽							
10			8	3-22-17 N=39				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*
▽ *After One Day*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-30-2018 | Boring Completed: 01-30-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-62

BORING LOG NO. IT-2

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8834° Longitude: -123.0057°
Northing: 453807.18 Easting: 1351129.35

Approximate Surface Elev: 361 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.3	361+/-	**TOPSOIL**, 3 inches
		FILL - SANDY LEAN CLAY (CL), with gravel, angular, light brown and red, very stiff
		dark brown to brown, less gravel and sand
		stiff, highly weathered gravel
10.5	350.5+/-	
		FAT CLAY (CH), medium to high plasticity, red with white veins, very stiff
12.5	348.5+/-	
		LEAN CLAY (CL), with sand, tan and red, very stiff, highly weathered gravel
15.0	346+/-	
		Boring Terminated at 15 Feet

DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS
	15	4-7-9 N=16 HP = 3.0 tsf
5	13	5-6-9 N=15
	12	3-4-10 N=14
10	12	14-10-10 N=20 HP = 3.25 tsf
	12	3-8-7 N=15 HP = 2.0 tsf
15		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | LABORATORY HP (tsf) | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

- *At completion of drilling*
- *After One Day*
- *After Two Days*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-29-2018 | Boring Completed: 02-01-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-63

BORING LOG NO. F-4

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88461° Longitude: -123.00626°
Northing: 454240.246 Easting: 1350961.507

Surface Elev.: 357.24 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.2	357	**TOPSOIL**, ~2 inches of topsoil
		FILL - SILT WITH SAND (ML), nonplastic, brown and black, stiff, black faces appear slickensided
5.0	352	**LEAN CLAY WITH SAND (CL)**, low to medium plasticity, brown and light brown, stiff
		grades medium stiff
		grades to black, yellow, orange and red, medium stiff to stiff, mottled
20.0	337	**SILTY SAND (SM)**, fine grained, gray and brown, loose
25.0	332	

INSTALLATION DETAILS: Cover; Bentonite Seal; Cement-Bentonite Grout

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		12	1-3-6 N=9	1.5 (HP)			
5		18	1-4-8 N=12	2.25 (HP)			
		18	2-4-6 N=10	2.0 (HP)			
10		18	4-6-9 N=15	2.75 (HP)			
15		18	2-3-6 N=9	1.0 (HP)			
20		18	1-2-3 N=5				
25							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

- *20' While Drilling*
- *15.4' on 12/19/2017*
- *11.0' on 1/28/2017*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 | Boring Completed: 12-07-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-35

BORING LOG NO. F-4

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88461° Longitude: -123.00626°
Northing: 454240.246 Easting: 1350961.507

Surface Elev.: 357.24 (Ft.)

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
			SILT (ML), trace sand, low plasticity, red and yellow, stiff, mottled									
	30.0	327					18	2-4-7 N=11	1.75 (HP)			
			SILTY SAND (SM), coarse grained, subangular, dark gray and brown, medium dense, 6 inch silt lens at 30.1 feet	30			18	2-5-7 N=12				
	35.5	321.5										
			SILT WITH SAND (ML), low plasticity, dark gray, hard	35			18	12-20-12 N=32	3.75 (HP)			
	40.0	317										
			BEDROCK, gray	40			12	2-9-34 N=43				
	41.5	315.5	***Boring Terminated at 41.5 Feet***									

Cement-Bentonite Grout

Vibrating Wire Piezometer at 41' (S/N 1700280, P/N 52611028)

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

- *20' While Drilling*
- *15.4' on 12/19/2017*
- *11.0' on 1/28/2017*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 12-07-2017 | Boring Completed: 12-07-2017
Drill Rig: D-50 | Driller: Holocene
Project No.: 82175107 | Exhibit: A-35

BORING LOG NO. F-5

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8849° Longitude: -123.0065°
Northing: 454338.98 Easting: 1350899.4

Approximate Surface Elev: 360.5 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
0.3	360.5+/-
10.0	350.5+/-

TOPSOIL, 3 inches

FILL - SANDY LEAN CLAY (CL), with gravel, fine grained, angular, light and dark brown

very stiff

stiff

SANDY LEAN CLAY (CL), with gravel, fine to medium grained, orangish brown, stiff, highly weathered gravel

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		15	5-8-8 N=16				
5		12	4-4-8 N=12				
		12	4-5-9 N=14				
10		12	4-6-7 N=13				
15		12	5-5-8 N=13				
20		12	5-4-9 N=13				
25							

WATER LEVEL OBSERVATIONS

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 02-01-2018 | Boring Completed: 02-01-2018

Drill Rig: CME 850 | Driller: Holt Services

Project No.: 82175107 | Exhibit: A-64

BORING LOG NO. F-5

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8849° Longitude: -123.0065°
Northing: 454338.98 Easting: 1350899.4

Approximate Surface Elev: 360.5 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
SANDY LEAN CLAY (CL), with gravel, fine to medium grained, orangish brown, stiff, highly weathered gravel *(continued)*										
very stiff					15	10-8-13 N=21				
		30								
tan and red					15	4-7-9 N=16 HP = 2.5 tsf				
		35								
orangish brown with red and yellow streaks					10	7-7-11 N=18				
40.0	320.5+/-	40								
SILTY SAND (SM), with gravel, dark gray, medium dense					12	4-3-9 N=12				
41.5	319+/-									
Boring Terminated at 41.5 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 02-01-2018 | Boring Completed: 02-01-2018

Drill Rig: CME 850 | Driller: Holt Services

Project No.: 82175107 | Exhibit: A-64

BORING LOG NO. F-6

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8848° Longitude: -123.0068°
Northing: 454304.39 Easting: 1350805.47

Approximate Surface Elev: 360 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.3	360+/-	**TOPSOIL**, 3 inches
		FILL - SANDY SILT (ML), fine grained, light brown with black spotting, stiff
		trace gravel, angular
15.0	345+/-	
		SANDY LEAN CLAY (CL), fine to medium grained, very stiff
20.0	340+/-	
		SILTY SAND (SM), with gravel, fine grained, brown and orange, with black veins, medium dense
21.5	338.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
5		12	4-7-7 N=14
		12	4-5-10 N=15
		15	3-6-8 N=14
10		12	2-5-8 N=13
15		12	6-7-12 N=19
20		12	7-12-13 N=25

WATER LEVEL OBSERVATIONS: ▽ at completion of drilling

LABORATORY HP (tsf) | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 02-01-2018 | Boring Completed: 02-01-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-65

BORING LOG NO. F-7

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8852° Longitude: -123.0067°
Northing: 454448.94 Easting: 1350832.85

Approximate Surface Elev: 359 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
0.3	359+/-	**TOPSOIL**, 3 inches				
		FILL - SANDY LEAN CLAY (CL), orangish brown, medium stiff, black spotting		X	13	3-4-3 N=7
		with gravel, stiff	5	X	12	4-4-6 N=10
		light brown to dark brown, medium stiff		X	12	1-4-3 N=7
		orangish brown, weathered gravel	10	X	10	3-2-3 N=5
15.0	344+/-	**SANDY SILT (ML)**, fine grained, light brown with black veins, very stiff	15	X	10	3-6-14 N=20
21.5	337.5+/-		20	X	10	6-9-10 N=19
		Boring Terminated at 21.5 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 02-01-2018 | Boring Completed: 02-01-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-66

BORING LOG NO. W-1

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8851° Longitude: -123.006°
Northing: 454417.13 Easting: 1351034.21

Approximate Surface Elev: 361 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	361+/-										
TOPSOIL, 3 inches											
FILL - SANDY LEAN CLAY (CL), trace gravel, orangish brown with black spotting, stiff					X	15	3-5-7 N=12				
			5		X	12	3-6-7 N=13				
fine to medium grained, dark brown and yellow, highly weathered gravel					X	15	3-6-6 N=12				
very stiff			10		X	13	5-8-9 N=17				
15.0	346+/-										
SILT WITH SAND (ML), brown, medium stiff			15		X	10	4-3-4 N=7				
stiff			20		X	12	5-6-5 N=11				
25.0	336+/-		25								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 02-01-2018 | Boring Completed: 02-01-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-67

TEST PIT LOG NO. TP-1

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88464° Longitude: -123.00801°
Northing: 454247.727 Easting: 1350507.577

Surface Elev.: 362.22 (Ft.)

DEPTH		ELEVATION (Ft.)
0.2	**TOPSOIL**, ~2 inches of topsoil	362
1.0	**FILL - SILTY GRAVEL (GM)**, trace sand, reddish brown, loose	361
	CLAYEY GRAVEL (GC), with cobbles and boulders, brown, medium dense to very dense	
	~6 foot long boulder with flat top	
6.0		356
	CLAYEY SAND (SC), brown and black, medium dense to very dense, probable residual bedrock	
10.0		352
	Test Pit Terminated at 10 Feet	

GRAPHIC LOG	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (tsf)	WATER CONTENT (%)	PERCENT FINES
		5	▽		2.0 (HP)		
		10					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *Seepage observed at 8'*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-51

TEST PIT LOG NO. TP-2

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88448° Longitude: 123.00594°
Northing: 454193.974 Easting: 1351043.483

Surface Elev.: 357.44 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.1	357.5	**TOPSOIL**, ~1 inches of topsoil
		FILL - CLAYEY GRAVEL (GC), trace sand, brown with red, loose to medium dense
2.5	355	
		CLAYEY GRAVEL (GC), with cobbles and boulders, reddish brown with black and white, medium dense to dense, probable residual bedrock
9.0	348.5	
		BOULDER
10.0	347.5	
		Test Pit Terminated at 10 Feet

GRAPHIC LOG | INSTALLATION DETAILS | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | LABORATORY HP (tsf) | WATER CONTENT (%) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-52

TEST PIT LOG NO. TP-3

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88407° Longitude: -123.00777°
Northing: 454039.442 Easting: 1350571.148

Surface Elev.: 362.50 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.0	362.5	**FILL - GRAVELLY LEAN CLAY (CL)**, reddish brown, stiff
1.5	361	**SILT (ML)**, trace sand, brown, medium stiff to stiff, rootlets observed at top of layer, possible relic topsoil
5.3	357.5	**CLAYEY GRAVEL (GC)**, gray and brown, dense to very dense, black and white veins, probable weathered bedrock gray, vesicular rock
10.0	352.5	***Test Pit Terminated at 10 Feet***

DEPTH (Ft.)	SAMPLE TYPE	LABORATORY HP (tsf)
0		
		4.5+ (HP)
		2.0 (HP)
5		
10		

WATER LEVEL OBSERVATIONS: ▽ at 10 ft

WATER CONTENT (%):

PERCENT FINES:

INSTALLATION DETAILS:

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *Seepage observed at 9.5'*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-53

TEST PIT LOG NO. TP-4

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88385° Longitude: -123.00884°
Northing: 453958.063 Easting: 1350296.615

Surface Elev.: 369.69 (Ft.)

DEPTH	ELEVATION (Ft.)	LOG	DESCRIPTION
0.5	369		**FILL - WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM)**, gray and brown, medium dense
			SILT WITH SAND (ML), brown, soft to medium stiff
2.5	367		**SANDSTONE**, light gray to reddish brown, dense to very dense, excavates in blocks
10.0	359.5		***Test Pit Terminated at 10 Feet***

DEPTH (Ft.)	SAMPLE TYPE	LABORATORY HP (tsf)
		0.75 (HP)
5		
10		

INSTALLATION DETAILS

WATER LEVEL OBSERVATIONS

WATER CONTENT (%)

PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed due to mud rotary methods

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-54

TEST PIT LOG NO. TP-5

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.8837° Longitude: -123.0091°
Northing: 453903.061 Easting: 1350229.512

Surface Elev.: 370.00 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.0	370	**TOPSOIL**, trace cobbles, brown, soft to medium stiff, ~36 inches of topsoil, roots
3.0	367	**SANDSTONE**, tan to brown, dense to very dense, excavates in blocks
		with black veins
10.0	360	***Test Pit Terminated at 10 Feet***

DEPTH (Ft.)	SAMPLE TYPE	LABORATORY HP (tsf)	WATER CONTENT (%)	PERCENT FINES
0				
		0.75 (HP)		
5				
10				

INSTALLATION DETAILS

WATER LEVEL OBSERVATIONS

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-55

TEST PIT LOG NO. TP-6

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88354° Longitude: -123.00715°
Northing: 453849.576 Easting: 1350733.485

Surface Elev.: 364.63 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.1	364.5	**TOPSOIL**, ~1 inches of topsoil
1.5	363	**FILL - SILT WITH SAND (ML)**, trace gravel, brown, medium stiff
3.0	361.5	**GRAVELLY LEAN CLAY (CL)**, rounded, reddish brown, stiff
10.0	354.5	**COBBLES AND BOULDERS WITH SILT**, brown to black
		Test Pit Terminated at 10 Feet

SAMPLE TYPE	LABORATORY HP (tsf)	WATER CONTENT (%)	PERCENT FINES
	1.0 (HP)		
	4.5+ (HP)		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *Seepage observed at 1.5'*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-56

TEST PIT LOG NO. TP-7

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.8834° Longitude: -123.0062°
Northing: 453825 Easting: 1350970

Approximate Surface Elev: 365 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (tsf)	WATER CONTENT (%)	PERCENT FINES
0.1	365+/-								
TOPSOIL, ~1 inches of topsoil									
FILL - SILT WITH SAND (ML), trace gravel, brown, medium stiff to stiff							3.0 (HP)		
2.0	363+/-				▽				
LEAN CLAY WITH SAND (CL), trace gravel, reddish brown, medium stiff to stiff, probable weathered bedrock				5			2.0 to 4.5+		
10.0	355+/-								
Test Pit Terminated at 10 Feet				10					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *Seepage observed at 2'*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-57

TEST PIT LOG NO. TP-8

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88333° Longitude: -123.00839°
Northing: 453768.173 Easting: 1350413.767

Surface Elev.: 364.47 (Ft.)

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.1	364.5	**TOPSOIL**, ~1 inches of topsoil
		SILT (ML), trace sand, brown, soft to medium stiff
2.5	362	
		POORLY GRADED GRAVEL WITH CLAY (GP-GC), reddish brown, medium dense, black seams, probable weathered bedrock
5.5	359	
		LEAN CLAY WITH SAND (CL), gray with white, red, black and tan, stiff, probable decomposed bedrock
10.0	354.5	
		Test Pit Terminated at 10 Feet

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (tsf)	WATER CONTENT (%)	PERCENT FINES
			0.75 (HP)		
5					
	▽				
10					

INSTALLATION DETAILS

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *Seepage observed at 8.5'*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-58

TEST PIT LOG NO. TP-9

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION: See Exhibit A-2

Latitude: 44.88317° Longitude: -123.00799°
Northing: 453710.595 Easting: 1350516.958

Surface Elev.: 365.02 (Ft.)

DEPTH	ELEVATION (Ft.)	Description
0.1	365	**TOPSOIL**, ~1 inches of topsoil
		FILL - GRAVELLY LEAN CLAY (CL), reddish brown, medium stiff to stiff
7.0	358	**LEAN CLAY (CL)**, trace sand, dark brown, soft to medium stiff, rootlets, probable relic topsoil
10.5	354.5	***Test Pit Terminated at 10.5 Feet***

DEPTH (Ft.)	SAMPLE TYPE	LABORATORY HP (tsf)
		2.0 (HP)
		4.5+ (HP)
5		
10		

INSTALLATION DETAILS

WATER LEVEL OBSERVATIONS

WATER CONTENT (%)

PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: N/A

Advancement Method:
John Deere 35C Excavator

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exhibit A-8 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.
Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

Seepage observed at 9'

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Test Pit Started: 12-07-2017
Test Pit Completed: 12-07-2017
Excavator: Mini Trackhoe
Operator: Dan Fischer Excavating
Project No.: 82175107
Exhibit: A-59

BORING LOG NO. W-1

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8851° Longitude: -123.006°
Northing: 454417.13 Easting: 1351034.21

Approximate Surface Elev: 361 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDY SILT (ML), fine grained, dark brown, stiff		▽	X	10	12-5-9 N=14				
	very stiff	30		X	10	7-13-15 N=28				
31.5	329.5+/-									
	Boring Terminated at 31.5 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 02-01-2018 | Boring Completed: 02-01-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-67

BORING LOG NO. W-2A

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8848° Longitude: -123.006°
Northing: 454310.98 Easting: 1351031.79

Approximate Surface Elev: 361.5 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.3	361.5+/-	**TOPSOIL**, 3 inches
		FILL - SANDY LEAN CLAY (CL), orangish brown, stiff
5.0	356.5+/-	Auger grinding
5.5	356+/-	**FILL - BOULDERS & COBBLES**, gray, Angular rock fragments in sampler
		Auger Refusal at 5.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		15	4-6-9 N=15				
5							
		6	30-20-11 N=31				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-68

BORING LOG NO. W-2B

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8849° Longitude: -123.006°
Northing: 454342.89 Easting: 1351028.52

Approximate Surface Elev: 362 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	362+/-									
TOPSOIL, 3 inches										
FILL - SANDY LEAN CLAY (CL), trace gravel, brown and dark brown, very stiff, intermitten layers of sand and lean clay										
				X		5-7-9 N=16				
		5								
stiff				X		5-5-9 N=14				
				X		3-5-50/1"				
8.5	353.5+/-									
8.6 apparent rock	353.5+/-									
Auger Refusal at 8.6 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-69

BORING LOG NO. W-3A

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8845° Longitude: -123.0061°
Northing: 454214.61 Easting: 1351024.68

Approximate Surface Elev: 357 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3 **TOPSOIL**, 3 inches	357+/-									
FILL - SANDY SILT (ML), brown										
2.0	355+/-									
2.5 **FILL - CLAYEY GRAVEL WITH SAND (GC)**, angular, brown	354.5+/-									
2.8 and gray, very dense	354.5+/-				1	N=50/2"				
apparent rock										
Auger Refusal at 2.75 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-70

BORING LOG NO. W-3B

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8846° Longitude: -123.0061°
Northing: 454237.63 Easting: 1351023.65

Approximate Surface Elev: 357 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	357+/-								
TOPSOIL, 3 inches									
FILL - SANDY LEAN CLAY (CL), fine grained, orangish tan, stiff			X	12	3-7-7 N=14				
orangish tan with black spotting, very stiff		5	X	15	2-6-11 N=17				
trace weathered gravel			X	15	5-9-11 N=20				
medium stiff		10	X	12	5-3-3 N=6				
15.0	342+/-	15	X	16	2-4-50 N=54				
SANDY SILT (ML), brown, medium stiff									
16.4	340.5+/-								
16.5 **BASALT**, broken gravel in sampler tip	340.5+/-								
Auger Refusal at 16.5 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not observed

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-71

BORING LOG NO. W-4

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8842° Longitude: -123.006°
Northing: 454081.78 Easting: 1351010.07

Approximate Surface Elev: 357 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.3	357+/-	**TOPSOIL**, 3 inches
		FILL - SILTY SAND (SM), fine grained, brown and grayish brown, dense, trace weathered gravel
7.5	349.5+/-	**SANDY LEAN CLAY (CL)**, fine to medium grained, low to medium plasticity, orangish brown with red and white streaks, stiff, highly weathered gravel
		red and yellow, very stiff
		with gravel
20.0	337+/-	**CLAYEY SAND (SC)**, with gravel, fine to medium grained, angular, orangish brown, dense, weathered gravel
25.0	332+/-	

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
		12	4-13-20 N=33	
5		15	13-16-22 N=38	
		15	8-5-4 N=9	
10		15	5-7-8 N=15	
15		12	5-9-9 N=18	
20		15	12-15-24 N=39	
25				

WATER LEVEL OBSERVATIONS: ▽ While drilling; ▽ At completion of drilling

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-72

BORING LOG NO. W-4

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8842° Longitude: -123.006°
Northing: 454081.78 Easting: 1351010.07

Approximate Surface Elev: 357 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
SILTY SAND (SM), with gravel, fine grained, angular, grayish brown, dense					8	20-22-23 N=45				
30.0	327+/-									
30.3 apparent rock	326.5+/-	30			0	50/4" N=50/4"				
Boring Terminated at 30.33 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 Boring Completed: 01-31-2018

Drill Rig: CME 850 Driller: Holt Services

Project No.: 82175107 Exhibit: A-72

BORING LOG NO. W-5

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.884° Longitude: -123.0059°
Northing: 454010.5 Easting: 1351058

Approximate Surface Elev: 360.5 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	360.5+/-										
TOPSOIL, 3 inches											
FILL - SANDY SILT (ML), trace gravel, fine grained, brown, black spotting, weathered gravel											
very stiff					X		4-6-9 N=15 HP = 2.5 tsf				
with gravel, fine to medium grained			5		X		5-7-10 N=17				
					X		4-6-10 N=16 HP = 2.5 tsf				
dark brown, stiff			10	▽	X		2-3-7 N=10				
very stiff, moist to wet, white veins			15		X		6-7-8 N=15				
			20		X		6-9-9 N=18				
25.0	335.5+/-		25								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-73

BORING LOG NO. W-5

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.884° Longitude: -123.0059°
Northing: 454010.5 Easting: 1351058

Approximate Surface Elev: 360.5 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SILTY SAND (SM), with gravel, fine grained, brown, medium dense, yellow pockets of weathered gravel			X		18-9-10 N=19				
	26.5	334+/-									
		Boring Terminated at 26.5 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-73

BORING LOG NO. W-6

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8837° Longitude: -123.0058°
Northing: 453898.85 Easting: 1351082

Approximate Surface Elev: 362 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	MATERIAL DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	362+/-	**TOPSOIL**, 3 inches									
		FILL - SANDY SILT (ML), trace gravel, orangish brown to with red spots									
		stiff			X	12	3-5-7 N=12 HP = 2.0 tsf				
			5		X	12	3-6-6 N=12				
		very stiff			X	15	3-6-10 N=16 HP = 3.0 tsf				
10.0	352+/-		10	▽							
		SANDY LEAN CLAY (CL), dark brown and brown with black spotting, medium stiff, highly weathered gravel		▼	X	15	2-2-5 N=7 HP = 0.5 tsf				
15.0	347+/-		15								
		SILTY SAND (SM), fine grained, brown with maroon, dense			X	15	12-13-18 N=31				
		medium dense	20		X	15	14-15-12 N=27				
			25	▽							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*
▽ *2/5/2018*
▼ *3/27/2018*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-74

BORING LOG NO. W-6

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8837° Longitude: -123.0058°
Northing: 453898.85 Easting: 1351082

Approximate Surface Elev: 362 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SILTY SAND (SM), fine grained, brown with maroon, dense *(continued)*									
	26.5	brown to gray 335.5+/-			X	15	13-12-12 N=24				
		Boring Terminated at 26.5 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

- *At completion of drilling*
- *2/5/2018*
- *3/27/2018*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-31-2018 | Boring Completed: 01-31-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-74

BORING LOG NO. W-7

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8834° Longitude: -123.0059°
Northing: 453790.22 Easting: 1351072.76

Approximate Surface Elev: 363 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.3	363+/-	**TOPSOIL**, 3 inches
		FILL - SILT WITH SAND (ML), trace gravel, brown, stiff, weathered gravel
		trace organics, orangish brown
7.5	355.5+/-	
		SANDY LEAN CLAY (CL), orangish brown, medium stiff to sitff, sand pockets
		tan to maroon, medium stiff
		tan and brown
20.0	343+/-	
		SANDY SILT (ML), grayish brown, medium stiff, spots of bright tan
25.0	338+/-	

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		10	2-5-7 N=12				
5		8	5-6-7 N=13				
		13	2-4-4 N=8 HP = 1.5 tsf				
10		12	3-3-4 N=7 HP = 1.0 tsf				
15		10	2-3-3 N=6				
20		10	1-2-4 N=6				
25							

WATER LEVEL OBSERVATIONS: ▽ at 5

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:
Cave in may have affected water level

WATER LEVEL OBSERVATIONS

▽ *After One Day*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-29-2018 | Boring Completed: 01-29-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-75

BORING LOG NO. W-7

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8834° Longitude: -123.0059°
Northing: 453790.22 Easting: 1351072.76

Approximate Surface Elev: 363 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		LEAN CLAY (CL), tan to black, soft									
	26.5	336.5+/-			X	8	0-0-3 N=3				
		Boring Terminated at 26.5 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *After One Day*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-29-2018 | Boring Completed: 01-29-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-75

BORING LOG NO. W-8

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8831° Longitude: -123.0059°
Northing: 453694.46 Easting: 1351077.81

Approximate Surface Elev: 361.5 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	STRATIGRAPHIC DESCRIPTION
0.3	361.5+/-	**TOPSOIL**, 3 inches
		FILL - LEAN CLAY (CL), trace sand, fine grained, medium plasticity, brown with red spots, medium stiff
		orangish brown, stiff
		pockets of tan sand
11.0	350.5+/-	alternating layers of silty sand and lean clay with highly weathered gravel
		SANDY LEAN CLAY (CL), orangish brown with spots of tan, stiff, weathered gravel
15.0	346.5+/-	
		SANDY SILT (ML), brown with yellow spottiing and orange mottling, stiff
25.0	336.5+/-	

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
5		8	3-3-2 N=5				
		15	4-6-8 N=14 HP = 1.5 tsf				
		15	3-4-5 N=9 HP = 1.5 tsf				
10		15	3-4-5 N=9				
15	▽	10	4-4-6 N=10				
20		10	3-6-7 N=13				
25							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Boring backfilled with bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-29-2018 | Boring Completed: 01-29-2018

Drill Rig: CME 850 | Driller: Holt Services

Project No.: 82175107 | Exhibit: A-76

BORING LOG NO. W-8

PROJECT: Costco Warehouse CW# 17-0460

CLIENT: Costco Wholesale
Issaquah, WA

SITE: Kuebler Boulevard & 27th Avenue
Salem, OR

LOCATION See Exhibit A-2

Latitude: 44.8831° Longitude: -123.0059°
Northing: 453694.46 Easting: 1351077.81

Approximate Surface Elev: 361.5 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SILTY SAND (SM), with gravel, grayish brown with black spotting, medium dense, weathered gravel			X	15	6-9-14 N=23				
	26.5	335+/-									
		Boring Terminated at 26.5 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 bentonite grout upon completion

See Exhibit A-8 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.
Elevations were interpolated from a topographic site plan.

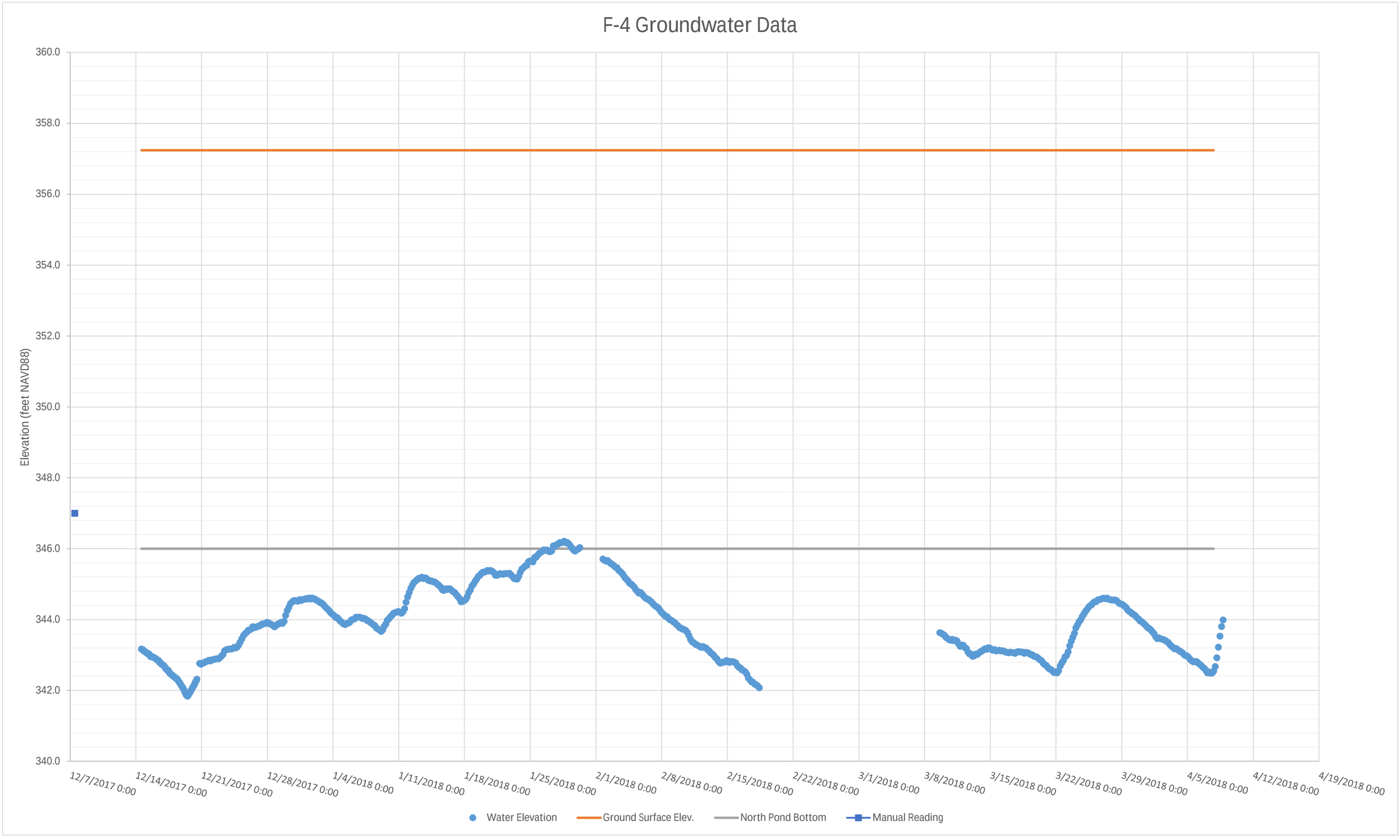
Notes:

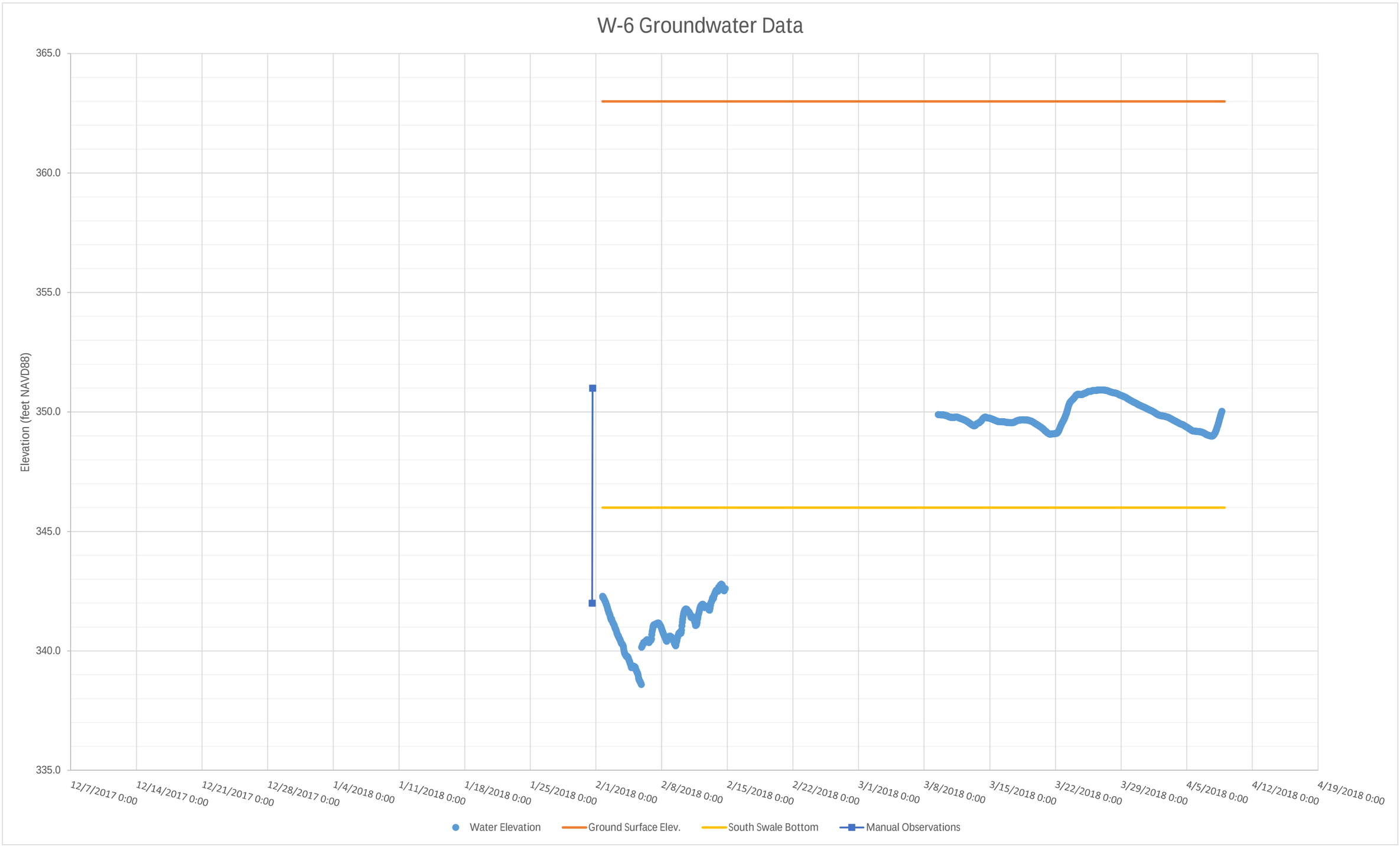
WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

Terracon
21905 64th Ave W Ste 100
Mountlake Terrace, WA

Boring Started: 01-29-2018 | Boring Completed: 01-29-2018
Drill Rig: CME 850 | Driller: Holt Services
Project No.: 82175107 | Exhibit: A-76


F-4 Groundwater Data
Elevation (feet NAVD88)
360.0
358.0
356.0
354.0
352.0
350.0
348.0
346.0
344.0
342.0
340.0
12/7/2017 0:00
12/14/2017 0:00
12/21/2017 0:00
12/28/2017 0:00
1/4/2018 0:00
1/11/2018 0:00
1/18/2018 0:00
1/25/2018 0:00
2/1/2018 0:00
2/8/2018 0:00
2/15/2018 0:00
2/22/2018 0:00
3/1/2018 0:00
3/8/2018 0:00
3/15/2018 0:00
3/22/2018 0:00
3/29/2018 0:00
4/5/2018 0:00
4/12/2018 0:00
4/19/2018 0:00
Water Elevation
Ground Surface Elev.
North Pond Bottom
Manual Reading


W-6 Groundwater Data
365.0
360.0
355.0
350.0
345.0
340.0
335.0
Elevation (feet NAVD88)
12/7/2017 0:00
12/14/2017 0:00
12/21/2017 0:00
12/28/2017 0:00
1/4/2018 0:00
1/11/2018 0:00
1/18/2018 0:00
1/25/2018 0:00
2/1/2018 0:00
2/8/2018 0:00
2/15/2018 0:00
2/22/2018 0:00
3/1/2018 0:00
3/8/2018 0:00
3/15/2018 0:00
3/22/2018 0:00
3/29/2018 0:00
4/5/2018 0:00
4/12/2018 0:00
4/19/2018 0:00
Water Elevation
Ground Surface Elev.
South Swale Bottom
Manual Observations

APPENDIX B
LABORATORY TESTING

Laboratory Testing Description

The boring logs and samples were reviewed by a geotechnical engineer who selected soil samples for testing. A brief description of the tests performed follows.

Selected samples were tested for particle size distribution and plastic limit/liquid limit (Atterberg limits) to aid in classifying the soils in accordance with the Unified Soil Classification System (USCS). The USCS is summarized in Appendix C. Fines content (the fraction passing the No. 200 sieve) and Atterberg limits are reported on the boring logs. Particle size distribution and Atterberg limit plots are included in this appendix.

In addition to the standard soil classification tests, other various tests were performed as detailed below in general accordance with the ASTM listed.

Standard Proctor
Terracon performed standard Proctor compaction testing using ASTM D698A on sample S-2 out of test pit TP-7.

California Bearing Ratio
Terracon performed a CBR test using ASTM D1883 on compacted specimens from sample S-2 out of test pit TP-7.

Corrosion Tests
Terracon performed lab electrical resistivity tests on a composite of selected samples using ASTM G57. In addition, pH and sulfate/chloride testing was conducted on the composite sample.

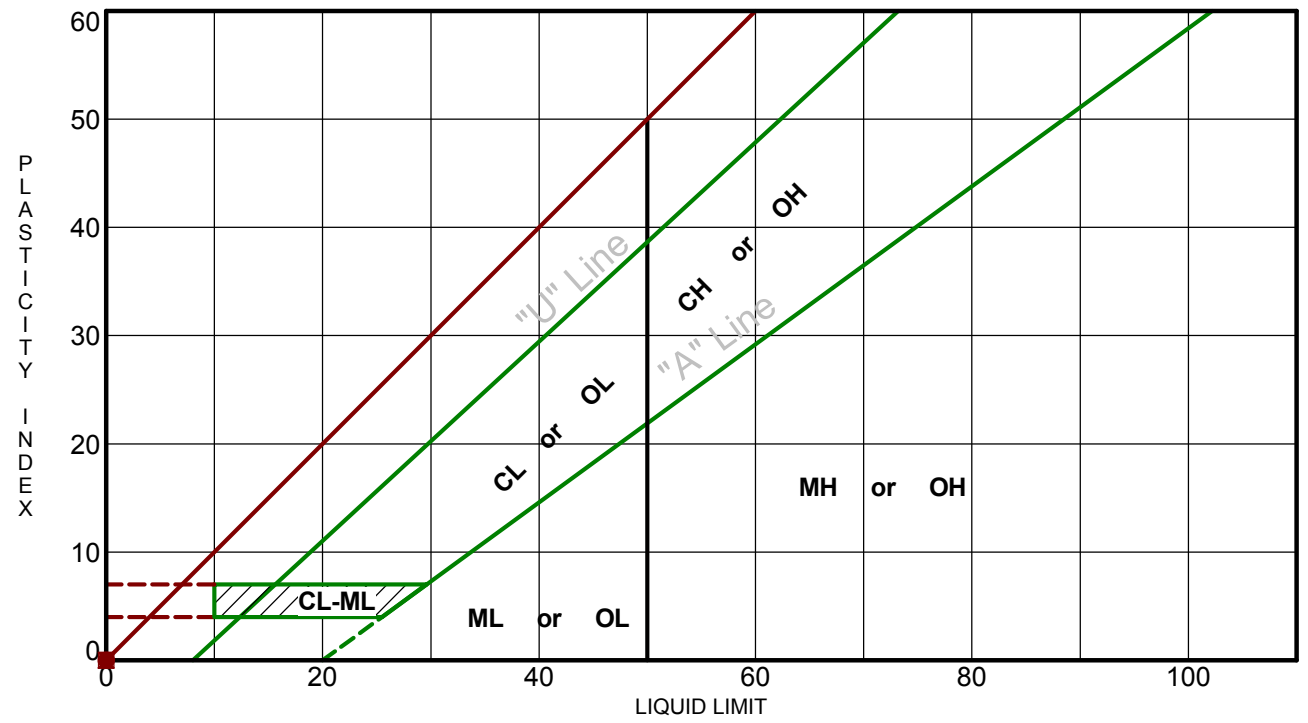
Topsoil Analysis
A & L Western Laboratories of Tigard, Oregon was selected to run topsoil analysis for the parameters detailed in the CWDR. The analysis was performed on a composite of selected split-barrel samples advanced from the ground surface at the site.

Water Quality
Water quality information was obtained from the City of Salem Public Works Department.

Laboratory test reports are included in this appendix.

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
● B-10	5 - 6.5	NP	NP	NP	50	ML	SANDY SILT
⊠ B-15	5 - 6.5	NP	NP	NP	43	SM	SILTY SAND

PROJECT: Costco Warehouse CW# 17-0460

SITE: Kuebler Boulevard and 27th Avenue
Salem, OR

Terracon
4103 SE International Way Ste 300
Portland, OR

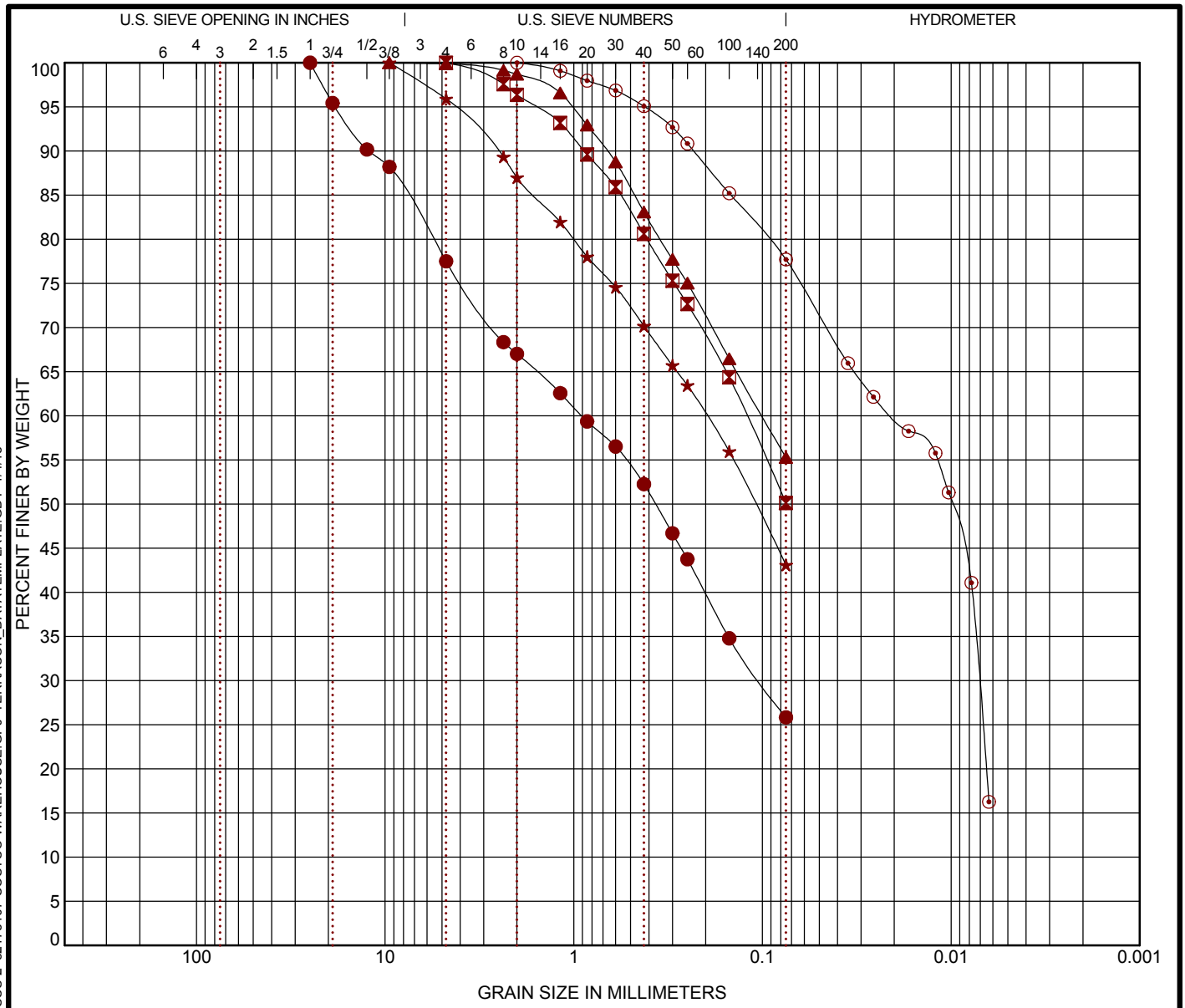
PROJECT NUMBER: 82175107

CLIENT: Costco Wholesale
Issaquah, WA

EXHIBIT: B-2

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



Boring ID	Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
B-6b	7.5 - 9	SILTY SAND W/ GRAVEL (SM)	41					
B-10	5 - 6.5	SANDY SILT (ML)	49	NP	NP	NP		
B-13	5 - 6.5	SANDY LEAN CLAY (CL)	36					
B-15	5 - 6.5	SILTY SAND (SM)	54	NP	NP	NP		
DP-1	10 - 11.5	LEAN CLAY W/ SAND (CL)	33					

Boring ID	Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Fines	%Clay
B-6b	7.5 - 9	25	0.907	0.104		22.5	51.7		25.8	
B-10	5 - 6.5	4.75	0.121			0.0	49.9		50.1	
B-13	5 - 6.5	9.5	0.101			0.1	44.6		55.3	
B-15	5 - 6.5	9.5	0.198			4.1	52.8		43.1	
DP-1	10 - 11.5	2	0.02	0.007		0.0	22.3		77.7	

PROJECT: Costco Warehouse CW# 17-0460

SITE: Kuebler Boulevard and 27th Avenue
Salem, OR

Terracon
4103 SE International Way Ste 300
Portland, OR

PROJECT NUMBER: 82175107

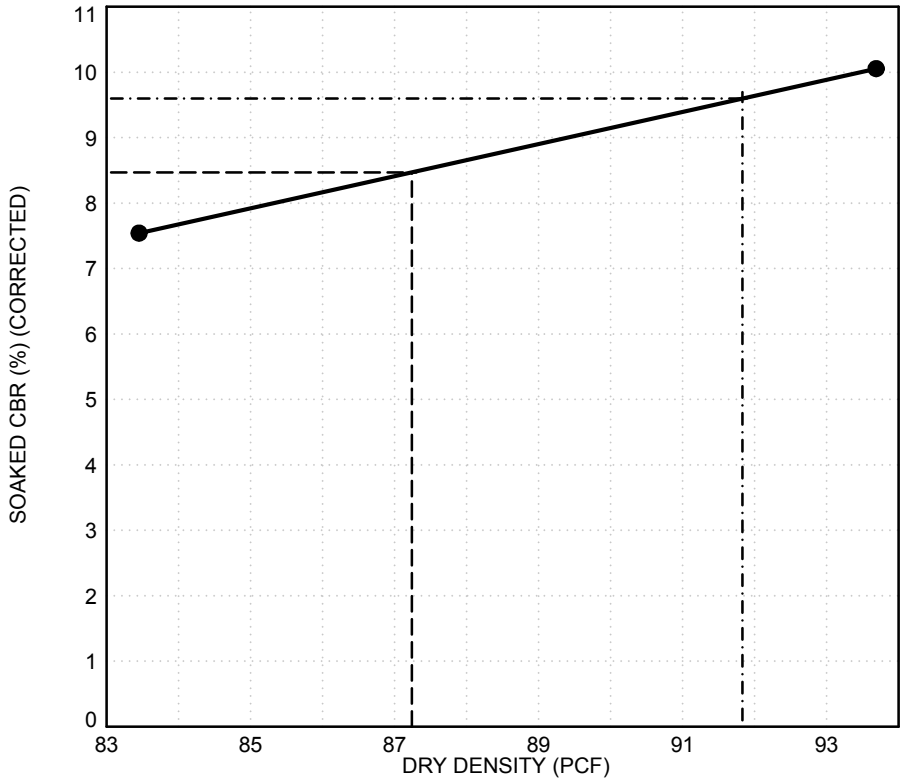
CLIENT: Costco Wholesale
Issaquah, WA

EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 82175107 COSTCO WAREHOUSE.GPJ TERRACON_DATATEMPLATE.GDT 1/4/18

CALIFORNIA BEARING RATIO

ASTM D1883-07[2]



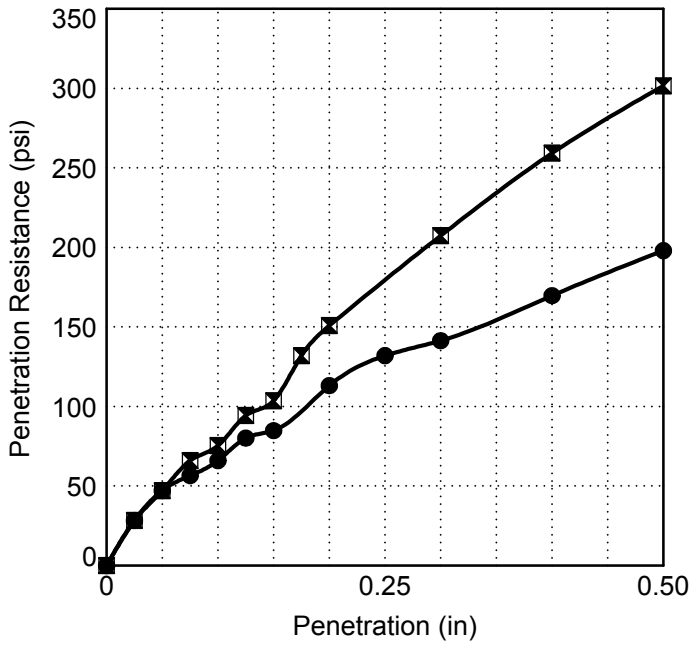
Source of Material: **TP-7 1.0**

Description of Material: **BROWN SILT W/ SAND (FILL)**

Remarks:

Percent Fines: **%**

Atterberg Limits: LL PL PI



Sample No.	1	3	
Sample Condition	Soaked		
Compaction Method	698A		
Maximum Dry Density, (pcf)	91.83	91.83	
Optimum Moisture Content, (%)	27.6	27.6	
Dry Density before Soaking, (pcf)	83.45	93.69	
Moisture Content, (%)			
After Compaction	27.6	27.8	28.3
Top 1" After Soaking	33.6	28.5	29.3
Surcharge,. (lbs)	10.00	10.00	
Swell, (%)	-1.00	-0.76	
Bearing Ratio, (%)	7.5	10.1	

Dry Density @ 90% 82.6 pcf

Dry Density @ 95% 87.2 pcf

Dry Density @ 100% 91.8 pcf

CBR @ 90% Density

CBR @ 95% Density 8.5

CBR @ 100% Density 9.6

PROJECT: Costco Warehouse CW# 17-0460

SITE: Kuebler Boulevard and 27th Avenue
Salem, OR

Terracon
4103 SE International Way Ste 300
Portland, OR

PROJECT NUMBER: 82175107

CLIENT: Costco Wholesale
Issaquah, WA

EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. CBR 3PT REPORT 82175107 COSTCO WAREHOUSE.GPJ TERRACON_DATATEMPLATE.GDT 1/3/18

CHEMICAL LABORATORY TEST REPORT

Project Number: 82175107
Service Date: 01/08/18
Report Date: 01/09/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Project

Costco Wholesale- Salem, OR- Warehouse

Sample Submitted By: Terracon (82) **Date Received:** 1/5/2018 **Lab No: 18-0006**

Results of Corrosion Analysis

Sample Number	S-3, S-2, S-2
Sample Location	F-2, F-3, F-4
Sample Depth (ft.)	7.5, 5.0, 5.0
pH Analysis, AWWA 4500 H	7.76
Water Soluble Sulfate (SO4), ASTM D 516 (mg/kg)	83
Chlorides, ASTM D 512 (mg/kg)	30
Resistivity, ASTM G 57 (ohm-cm)	7760

Analyzed By: Trisha Campo
Chemist

A & L WESTERN AGRICULTURAL LABORATORIES

10220 S.W. NIMBUS AVE I BUILDING K-9 I PORTLAND, OREGON 97223 I (503) 968-9225 I FAX (503) 598-7702

REPORT NUMBER: 17-361-064

CLIENT NO:

SEND TO: TERRACON
21905 64TH AVENUE
MOUNT LAKE TERRACE, WA 98043-

SUBMITTED BY: TORI HESEDAHL

GROWER: PROJ #82175107 SALEM OR

DATE OF REPORT: 01/08/18

SOIL ANALYSIS REPORT

SAMPLE ID	LAB NUMBER	Organic Matter		Phosphorus		Potassium	Magnesium	Calcium	Sodium	pH		Hydrogen	Cation Exchange Capacity	PERCENT CATION SATURATION (COMPUTED)				
		* % Rating	** ENR lbs/A	P1 (Weak Bray) **** * ppm	$NaHCO_3$-P (OlsenMethod) **** * ppm	K ***** * ppm	Mg *** * ppm	Ca *** * ppm	Na *** * ppm	Soil pH	Buffer Index	H meq/100g	C.E.C. meq/100g	K %	Mg %	Ca %	H %	Na %
PCOMP	59085	6.5VH	160	1VL	15**	267H	214M	1022L	13VL	5.2	6.2	4.0	11.6	5.9	15.2	43.9	34.5	0.5

** NaHCO3-P unreliable at this soil pH

SAMPLE NUMBER	Nitrogen NO_3-N ppm	Sulfur SO_4-S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Excess Lime Rating	Soluble Salts mmhos/cm	Chloride Cl ppm		PARTICLE SIZE ANALYSIS			
												SAND %	SILT %	CLAY %	SOIL TEXTURE
PCOMP	44VH	24M	0.8L	80VH	26VH	0.6L	0.1VL	L	0.6L						

* CODE TO RATING: VERY LOW (VL), LOW (L), MEDIUM (M), HIGH (H), AND VERY HIGH (VH).
** ENR - ESTIMATED NITROGEN RELEASE
*** MULTIPLY THE RESULTS IN ppm BY 2 TO CONVERT TO LBS. PER ACRE OF THE ELEMENTAL FORM
**** MULTIPLY THE RESULTS IN ppm BY 4.6 TO CONVERT TO LBS. PER ACRE P_2O_5
***** MULTIPLY THE RESULTS IN ppm BY 2.4 TO CONVERT TO LBS. PER ACRE K_2O
MOST SOILS WEIGH TWO (2) MILLION POUNDS (DRY WEIGHT) FOR AN ACRE OF SOIL 6-2/3 INCHES DEEP

This report applies only to the sample(s) tested. Samples are retained a maximum of thirty days after testing.

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES

10220 S.W. NIMBUS AVE I BUILDING K-9 I PORTLAND, OREGON 97223 I (503) 968-9225 I FAX (503) 598-7702

REPORT NUMBER: 17-361-065 **CLIENT:** 99999

SUBMITTED BY:

SEND TO: TERRACON
21905 64TH AVENUE
MOUNT LAKE TERRACE, WA 98043-

GROWER: PROJ #82175107 SALEM OR

DATE OF REPORT: 01/05/18

SOIL PHYSICAL CHARACTERISTICS

Sample ID	Lab Number	% Sand	% Silt	% Clay	Soil Texture	Moisture @ 1/3 Bar	Moisture @ 15 Bar	Available Water %
PCOMP	59085	34	34	33	CLAY LOAM			

NOTES:

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES

10220 S.W. NIMBUS AVE I BUILDING K-9 I PORTLAND, OREGON 97223 I (503) 968-9225 I FAX (503) 598-7702

REPORT NUMBER: 17-361-064 **CLIENT:** 9999

SUBMITTED BY: TORI HESEDAHL

SEND TO: TERRACON
21905 64TH AVENUE
MOUNT LAKE TERRACE, WA 98043-

GROWER: PROJ #82175107 SALEM O

DATE OF REPORT: 01/08/18

SOIL FERTILITY GUIDELINES

RATE: /1000 sq **PAGE:** 1

Sample ID	Lab Number	Crop	SOIL AMENDMENTS				Nitrogen N	Phosphate P_2O_5	Potash K_2O	Magnesium Mg	Sulfur SO_4-S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
			Dolomite	Lime	Gypsum	Elemental Sulfur										
PCOMP	59085	LANDSCAPE		160			1.0	7.0			0.3	*				*

COMMENTS

PRIOR TO PLANTING: Spread the above requirements per 1000 sq ft and mix into the top 6 inches of soil. Initially, limit nitrogen to 25-30 ppm NO3-N or 1.5 lb N/1000 sq ft, to avoid salt damage. SPLIT any extra nitrogen evenly over the active growing season. Adjust rate according to local conditions and requirements. Allow for adequate establishment first (up to 30 days).
* ZINC: Where levels are low, apply according to label instructions. Consider fertilizer brands that also contain zinc, although they may not be sufficient to correct a severe deficiency.
* BORON may not necessarily be deficient in the soil, and it is hard to correct an excessive application. Therefore, apply boron only if confirmed deficient through a leaf analysis.

NOTES:

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES, INC.

1311 Woodland Avenue, Suite 1 · Modesto, California 95351 · (209) 529-4080

Report No: 17-361-064 **Account No:** 9999

Send to: TERRACON
21905 64TH AVENUE
MOUNT LAKE TERRACE, WA 98043

Date Received: 12/27/2017
Date Reported: 01/05/2018

SOIL ANALYSIS REPORT – EXTRACTABLE ALUMINUM

Analyte: **Aluminum**
Detection Limit: **0.5 mg/kg (ppm)**
Method: **1 N KCl extractable aluminum WREP-125, 2nd Ed S -15.10**

Lab Number:	Sample ID:	Level Found mg/kg (ppm)
59085	PCOMP	4.2

A & L Western Agricultural Laboratories, Inc.

Rogell Rogers, CCA, PCA
Agronomist

A & L WESTERN AGRICULTURAL LABORATORIES

1311 WOODLAND AVE #1 • MODESTO, CALIFORNIA 95351 • (209) 529-4080 • FAX (209) 529-4736

REPORT NUMBER: 17-361-064 **CLIENT:** 99999

SUBMITTED BY: TORI HESEDAHL

SEND TO: TERRACON
21905 64TH AVENUE
MOUNT LAKE TERRACE, WA 98043-

GROWER: PROJ #82175107 SALEM OR

DATE OF REPORT: 01/09/18

SOIL SALINITY ANALYSIS REPORT

Sample ID	Lab Number	SAR	ESP	Na meq/L	Ca meq/L	Mg meq/L	pH	CO_3 meq/L	HCO_3 meq/L	E.C. dS/m	Cl meq/L	B ppm	Saturation %
PCOMP	59085	0.3	< 0.1	0.4	2.9	1.3	5.2	0.0	0.8	0.6	0.3	0.1	41.1

NOTES:

Rogell Rogers, CCA, PCA
A & L WESTERN LABORATORIES, INC.

A & L WESTERN AGRICULTURAL LABORATORIES, INC.

1311 Woodland Avenue, Suite 1 · Modesto, California 95351 · (209) 529-4080

Report No: 17-361-064

Account No: 9999-D

Send to: TERRACON
21905 64TH AVENUE
MOUNT LAKE TERRACE, WA 98043

Grower: PROJ #82175107 SALEM OR

Submitted by: TORI HESEDAHL

Lab Number: 59085

Sample ID: PCOMP

Date Received: 12/27/2018
Date Reported: 01/09/2018

EPA 503 METALS SOIL ANALYSIS REPORT

Sample Preparation Method: EPA SW846-3050 B

Detection Limit mg/kg	Analyte	Level Found mg/kg	Method Code
0.25	Arsenic	BDL	EPA SW846-6010
0.03	Cadmium	BDL	EPA SW846-6010
0.1	Chromium	50.2	EPA SW846-6010
0.1	Copper	18.8	EPA SW846-6010
0.5	Lead	13.7	EPA SW846-6010
0.05	Mercury	0.90	EPA SW846-7471A
0.1	Molybdenum	0.2	EPA SW846-6010
0.1	Nickel	13.8	EPA SW846-6010
0.5	Selenium	BDL	EPA SW846-6010
0.05	Zinc	88.58	EPA SW846-6010
0.1	Silver	BDL	EPA SW846-6010
0.1	Vanadium	284.6	EPA SW846-6010

BDL - INDICATES THE LEVEL FOUND IS BELOW THE ESTABLISHED DETECTION LIMIT FOR THAT ANALYTE.
ANALYZED ON A DRY WEIGHT BASIS

A & L Western Agricultural Laboratories, Inc

Rogell Rogers, CCA, PCA
Agronomist

2017 Annual

Water Quality Report

Drinking Water Quality Data from 2016

CITY OF Salem AT YOUR SERVICE

Public Works Department

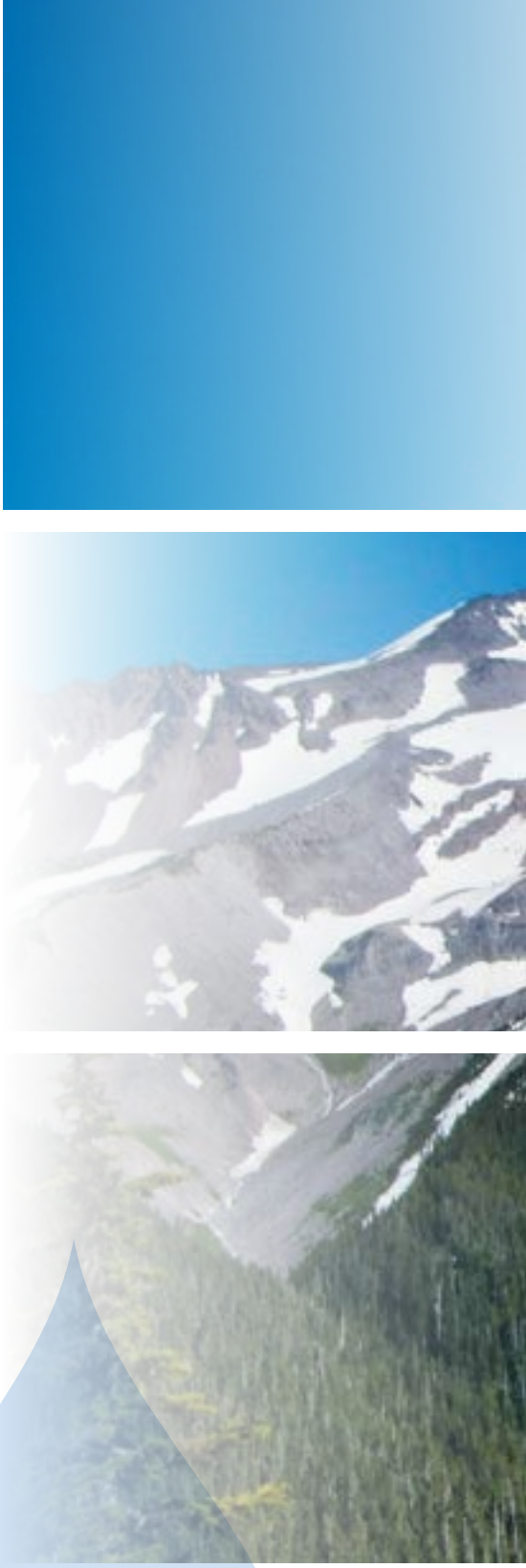
To our valued customers,

I am pleased to present the 2017 Annual Water Quality Report to you. The report contains important information about your drinking water, including where it comes from, how it is treated, and what, if any, contaminants it may contain. While many components of the report are mandated by the Environmental Protection Agency (EPA), the City of Salem prides itself in providing a more comprehensive report that is accessible to all our customers.

In 2016, City of Salem drinking water met or surpassed every public health requirement—more than 120 drinking water standards—set by the Oregon Health Authority and the EPA.

Water is the most valuable natural resource in the world today, and the City of Salem is fortunate to have an extremely high-quality, reliable, and abundant source. It's easy to take this precious resource for granted until you learn about the troubles other areas of the United States and the world are experiencing with their water supply. We often forget about the treatment process, hundreds of miles of water mains, pump stations, reservoirs, and dedicated staff it takes to deliver water to the average residential customer for less than a penny a gallon.

As always, the City of Salem strives to deliver high-quality water to your tap, as well as provide prompt service to our valued customers. For more information about Salem's drinking water, please visit **www.cityofsalem.net**.



Respectfully,

Dwayne Barnes
Utility Operations Manager, AIC
City of Salem Public Works Department

503-588-6211

Precipitation that falls in the
mountains
supplies most of our fresh water

H_2O

Water is the
most valuable
natural resource
in the world today

City of Salem Continues with Electronic Delivery of Annual Water Quality Report

The City of Salem is constantly exploring new ways to provide its customers with the best customer service while keeping costs low. After success last year with electronic delivery of the Annual report, the City is providing the same type of delivery for this year's Report. This favorable conversion will streamline the delivery of the Report, providing quicker access, and will significantly reduce costs associated with printing and mailing. The report is available on the City's website under Community Resources. However, if you prefer, hard copies are available at the Salem Civic Center, or you can request one by calling (503) 588-6333.

An average American uses
176 gallons
of water every day

Important Information Regarding Drinking Water

DRINKING WATER, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. Environmental Protection Agency (EPA) Safe Drinking Water Hotline at **1-800-426-4791**.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

EPA and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at **1-800-426-4791**.

¿Español?

Este documento contiene informacion importante sobre su agua potable. Si usted desea recibir una copia de este documento en español, por favor, llame al **503-588-6323** y pida una copia del reporte de calidad de agua o visite nuestra pagina electronica **www.cityofsalem.net/water**.

This document contains information about your potable water. If you would like to receive a copy of this document in Spanish, please call **503-588-6323** and ask for a water quality report or visit our website at **www.cityofsalem.net/water**.

Please Share!

If you are a manager or owner of a business or multifamily dwelling, please share this report with your employees or residents. If you would like additional copies, please call the Water Quality Hotline at **503-588-6323**.

What the EPA Wants You to Know about Contaminants in Source Waters

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and which can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure tap water is safe to drink, the EPA establishes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations set limits for contaminants in bottled water that must provide the same protection of public health.

Understanding Salem's Source Water Assessment

THE CITY OF SALEM'S SOURCE WATER ASSESSMENT was completed in 2003 with assistance from the Oregon Department of Environmental Quality. It provides an inventory of potential contaminant sources that could pose a risk to water quality of the North Santiam, which is Salem's primary drinking water source. As required by the Federal Safe Drinking Water Act, the assessment also identifies sensitive areas where the water supply may be more vulnerable to impact by these potential contaminant sources. These sensitive areas include those close to bodies of water, and areas where runoff and erosion potentials are highest.

Contaminants in Drinking Water

The City continues to monitor activities that may impact its drinking water source, within the North Santiam River Watershed. Activities that contribute to contaminant sources such as runoff and erosion, which increases sediment and turbidity, includes loose dirt, topsoil, minerals, sand and silt from roads and highways. It can also result from excessive removal of vegetation from grazing animals, forest practices, and farming practices.

The City works together with federal and state agencies, as well as other groups and individuals to reduce these impacts to the drinking water source. City staff also samples and monitors at various sites within the City to assure safe and high quality water be provided to its customers.

Salem's Source Water Assessment is available on the City's website at www.cityofsalem.net/water. The report is also available by calling the Water Quality Hotline at **503-588-6323**, or by emailing a request to **water@cityofsalem.net**.

Salem's Sources for Drinking Water

FOR MORE THAN 75 YEARS, the City of Salem has been getting its drinking water supply from the North Santiam River. This unique river source flows roughly 90 miles from the high ridges of the Cascade Range down to the Mid-Willamette Valley towards Salem; an area of about 760 square miles. It provides high-quality river water for many communities along its route, and specifically for Salem, this high quality water is suitable for a more natural filtering process, called slow sand filtration, at the Geren Island Water Treatment Facility. Following slow sand filtration, the water is further disinfected by adding sodium hypochlorite (liquid chlorine), fluorosilicic acid (liquid fluoride) for fluoridation, and sodium carbonate (soda ash) which adjusts the pH and minimizes the corrosion of lead and copper from household plumbing.

Additionally, the City utilizes an Aquifer Storage and Recovery (ASR) system, which is located in south Salem. During the winter months, when flows in the river are high and there is a low demand for water by customers, treated drinking water is injected into the ASR system. The water is stored in a naturally existing aquifer located 350 feet below Woodmansee Park. During the summer months, when the river is flowing low and customer water demand is high, water is pumped back to the surface and recovered from the ASR system. The recovered water is treated with calcium hypochlorite (chlorine) for disinfection and then conveyed to the distribution system, serving the south Salem water customers.

Where Does Salem's Water Come From?

The supply of water begins with a raindrop that falls within the North Santiam Watershed boundary, on the west side of the Cascade Range. It flows over land and through soil into the North Santiam River. It is stored briefly at Detroit Dam until it is released to flow towards other small cities and City of Salem.

Salem's Water System *serves a population of 192,000 daily from the North Santiam River Watershed*

What Is in Salem's Drinking Water?

2016 Water Quality Data

from Geren Island Treatment Facility, Distribution System, and Salem Water Customers

TEST	DATE TESTED	UNIT	MCLG (MRDLG)	MCL (MRDL)	DETECTED LEVEL	LOWEST RANGE	HIGHEST RANGE	VIOLATION	MAJOR SOURCES
Inorganic									
Fluoride[1]	2016	ppm	4	4	Average: 0.64	0.50	0.71	NO	Erosion of natural deposits; water additive—promotes strong teeth
Nitrate	2016	ppm	10	10	0.10	One sample collected		NO	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Nitrate-Nitrite	2016	ppm	10	10	0.10	One sample collected		NO	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Barium	2016	ppm	2	2	0.002	One sample collected		NO	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Copper	2016	ppm	1.3	AL = 1.3	90th Percentile: 0.342 Homes exceeding: 0	< 0.03	0.56	NO	Corrosion of household plumbing systems
Lead	2016	ppb	0	AL = 15	90th Percentile: 5.9 Homes exceeding: 2	< 1.0	23	NO	Corrosion of household plumbing systems
Microbiological									
Turbidity	2016	NTU	N/A	TT	100% of samples meet turbidity standards Average: 0.13	0.05	0.34	NO	Erosion and soil runoff
Total coliform	Through March 31, 2016	No units	0	Presence of coliform bacteria in > 5% of monthly samples	360 samples collected; no coliform bacteria were present in any samples	None	None	NO	Naturally present in the environment
Fecal coliform or *E. coli* bacteria				0	Fecal coliform or *E. coli* bacteria were not detected				Human or animal fecal waste
Total coliform	Starting April 1, 2016		N/A	TT	1,080 samples collected; no coliform bacteria were present in any samples				Naturally present in the environment
E. coli bacteria			0	Routine and repeat samples are total coliform-positive and either *E. coli*-positive or the water supplier fails to collect repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*	*E. coli* bacteria were not detected				Human and animal fecal waste
Disinfection By-Products, By-Product Precursors, and Disinfectant Residual									
Haloacetic acids	2016	ppb	0	60	Locational Running Annual Average: 35	3	57	NO	By-product of drinking water disinfection
Total Trihalomethanes	2016	ppb	0	80	Locational Running Annual Average: 40	14	53	NO	By-product of drinking water disinfection
Total Organic Carbon	2016	ppm	N/A	TT	Raw Water Annual Average: 1.24	0.87	2.0	NO	Naturally present in the environment
Chlorine Residual	2016	ppm	4.0	4.0	Entry Point Average: 1.18	0.41	1.57	NO	Remaining chlorine from disinfection process
Organic Constituents									
2, 4-D	2016	ppb	70	70	0.12	One sample collected		NO	Runoff from herbicide used on row crops
Unregulated Constituents									
Sodium	2016	ppm		20[2]	4.5	4.4	4.5	NO	Erosion of natural deposits

2016 Water Quality Data
from Aquifer Storage and Recovery Wells

TEST	DATE TESTED	UNIT	MCLG (MRDLG)	MCL (MRDL)	DETECTED LEVEL	LOWEST RANGE	HIGHEST RANGE	VIOLATION	MAJOR SOURCES
Inorganic									
Barium	2016	ppm	2	2	0.0021	One sample collected		NO	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Fluoride	2016	ppm	4	4	0.55	One sample collected		NO	Erosion of natural deposits; water additive—promotes strong teeth
Radioactive Constituents									
Combined Radium[2]	2014	pCi/L	0	5	1.01	One sample collected		NO	Erosion of natural deposits
Disinfection By-Products, By-Product Precursors, and Disinfectant Residual									
Haloacetic acids	2016	ppb	0	60	4.3	One sample collected		NO	By-product of drinking water disinfection
Total Trihalomethanes	2016	ppb	0	80	55	One sample collected		NO	By-product of drinking water disinfection
Total Organic Carbon	2016	ppm	N/A	TT	0.68	One sample collected		NO	Naturally present in the environment
Unregulated Constituents									
Sodium	2016	ppm		20[3]	6.8	One sample collected		NO	Erosion of natural deposits

[1] The City of Salem was conducting maintenance on the flouridation equipment from August 15, 2016–December 9, 2016.
[2] The City of Salem is required to report any detected contaminant within the last five years.
[3] EPA advisory level only.

Units of Measurement

Parts per Million (ppm)
One part per million is equal to one cup of food coloring in an Olympic size swimming pool (130,000 gallons)

Parts per Billion (ppb)
One part per billion is equal to one drop of food coloring in an Olympic size swimming pool (130,000 gallons)

Nephelometric Turbidity Unit (NTU)
The standard unit of measurement used in water analysis to measure turbidity in water samples.

Picocuries per Liter (pCi/L)
One part per billion of a curie per liter of water, used to measure radiation at very low levels.

Definitions

Maximum Contaminant Level Goal (MCLG)
The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL)
The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Action Level (AL)
The concentration of a contaminant which, if exceeded, triggers treatment or other requirements a water system must follow.

Treatment Technique (TT)
A required process intended to reduce the level of a contaminant in drinking water.

Maximum Residual Disinfectant Level (MRDL)
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG)
The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

City Conducts Lead and Copper Sampling in 2016

IN 2016, THE CITY OF SALEM CONDUCTED LEAD and copper sampling as mandated by the Lead and Copper Rule (LCR). From June 1, 2016 through September 30, 2016, 89 water samples were collected from Tier 1 homes and analyzed for lead and copper. Of the 89 samples, only two samples exceeded the Action Level (AL) for lead and none of the samples exceeded the AL for copper.

The Oregon Health Authority requires that the City collect and analyze a minimum of 50 water samples from Tier 1 homes. Assessments made in the 1990s identified 147 Tier 1 homes in Salem that met the qualifications for ongoing lead and copper sampling. Tier 1 homes, built between 1983 and 1985, are considered most at risk because of lead or lead-based plumbing components used during construction.

If present, elevated levels of lead can cause serious health problems, especially for pregnant woman and young children. Lead in drinking water is mostly from materials and components in service lines and home plumbing. The City of Salem is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize your exposure is available from the Safe Drinking Water Hotline at 1-800-426-4791 or at **www.epa.gov/safewater/lead**.

Free Lead Testing for Salem Water Customers

The City of Salem offers free lead testing to its water customers. If you are concerned about the levels of lead in your home and would like to request a free test, please call the Water Quality Hotline at **503-588-6323**.

Other Results

Turbidity is a measure of water's clarity. High turbidity (muddy water) results from suspended soil and organic matter in water. This can increase the risk of contamination by interfering with the drinking water treatment process. All of the City's turbidity samples were below required levels.

Radon is a naturally-occurring radioactive gas found throughout the U.S., more often in groundwater than surface water. Radon levels taken from Salem's Aquifer Storage and Recovery (ASR) wells are consistent with levels typically found in Salem area groundwater.

Cryptosporidium is a harmful microbial pathogen found in surface water throughout the U.S. Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Cryptosporidium must be ingested to cause disease and may be spread through means other than drinking water. Monitoring in 2016 did not detect Cryptosporidium in untreated North Santiam River source water.

Ways to Get Involved!

Salem City Council

Salem City Council is the policy-making body for the water system. The Council meets on the second and fourth Mondays of each month at 6 p.m. (in December, the first and second Monday at 6 p.m.). The meetings are open to the public and are held in the City Council Chambers in Room 240 of the Vern Miller Civic Center at 555 Liberty Street SE, Salem, Oregon. Feel free to call at 503-588-6091, or visit **www.cityofsalem.net** for more information.

North Santiam Watershed Council

The North Santiam Watershed Council members are local volunteers who act together to provide opportunities for stakeholders to cooperate in promoting, improving and sustaining the health of the North Santiam River Watershed, and its communities. The Council hosts events such as restoration project tours and river clean-ups during the year. Watershed Council meetings are open to the public and are held every second Thursday of each month (except December) at 6 p.m. at the Stayton Community Center at 400 West Virginia Street, Stayton, Oregon. Call 503-930-8202 or visit **www.northsantiam.org**.

Water Conservation

fact:

A leaky toilet could waste up to 200 gallons of water per day

Conservation Starts at Home

On average, one person uses over 100 gallons of water per day. Each water customer in the City of Salem can help conserve water by changing daily practices at home or work. Even a posting sign about water conservation tips is helpful. Some small changes include:

- Turn off the tap while brushing your teeth or washing your hands.
- Use a shower bucket. Instead of letting water run down the drain, collect it using a bucket and then water plants, or fill watering bucket for pets.
- Wash your cars on the lawn.
- Fix leaky toilets and faucets. Surprisingly, one drip per a second can add up to a lot in a day, and a year. This could be fixed and money can be saved.
- Landscape with plants, shrubs and trees that are suitable for this climate, and don't require excess watering during the summer. Remember, one inch per week.

The City of Salem can provide leaky toilet detection tablets and drip calculators. One can determine a leak by adding food coloring in the toilet tank. If the color shows up in the bowl without flushing, you have a leak. Good resources for native plants would include organizations and agencies like Marion Soil & Conservation District. For more information, go to **www.marionswcd.net**. To learn more about the tips listed above or about water conservation, visit the EPA Water Sense website at **www.epa.gov/WaterSense.**

City Offers Free Conservation Kits to Water Customers

Retrofitting existing fixtures can help reduce the amount of water you use every day and will help save money on your utility bill. The City offers free indoor and outdoor water conservation kits to its customers. To request a free water conservation kit, please call the Water Quality Hotline at 503-588-6323, or email us at **water@cityofsalem.net**.

One Inch Per Week Program

As much as 50 percent of water used outdoors is wasted from inefficient watering methods and systems. During the summer months, a high demand of water supply to customers comes at a period when water resources are already stressed due to hotter temperatures, drier conditions, and increased demand from vegetative growth. With this in mind, it is important to maintain a careful balance of your water needs, but to also keep in mind that the water used for drinking water comes from a river that is shared by other communities, wildlife, fish, and recreational users.

There are many uses for water during the summer months, including washing cars and walkways,

filling pools, and watering gardens, lawns and landscapes. There is an effective way to decrease outdoor water usage, thus saving money, water and energy. By giving your lawn only what it needs, you will potentially improve the durability of grass, reduce the need for chemical amendments like fertilizers, and decrease lawn mowing frequency. This will also improve local stream habitats for fish and wildlife, and improve water quality healthy for all downstream users on the Willamette River. Tips to efficiently improve your landscape include:

- Raise your lawn mower blade height to three inches. Longer grass blades retain more moisture, help keep weeds to a minimum, and encourage roots to grow deeper. Keep the mower blade sharp.
- Water deeply and infrequently. This encourages deep and strong root systems. Generally, landscapes need no more than **one inch per week**.
- Replace your irrigation system's clock timer controller with a weather-based irrigation controller, or a soil moisture sensor.
- Water early in the morning or late in the evening when temperatures are cool and the sun is low.
- Use mulch around vegetated areas. Mulch help retain moisture and keeps weeds out.
- Contact Oregon State University agriculture extension or other university extensions about fertilizer guides and applications. This will determine how much fertilizer is needed and reduce excess fertilizers from being used by unwanted vegetation like algae or weeds, or washing into nearby streams. It will also save costs. Remember, you can always add more.

Request a free One Inch per Week lawn watering gauge, provided by the City of Salem. To find out more information, call the Water Quality Hotline at 503-588-6323, or email water@cityofsalem.net.

By the Numbers

43.35
million gallons
peak daily water usage
August 20, 2016

22.20
million gallons
average daily winter demand
Jan.-Apr. and Oct.-Dec. 2016

32.40
million gallons
average daily summer demand
June-September 2016

9.520
billion gallons
total water produced
by the City of Salem in 2016

Salem Families Benefit from Low-Income Assistance Program

THE LOW-INCOME UTILITY ASSISTANCE PROGRAM, sponsored by the City of Salem, is dedicated to helping individuals and families facing financial difficulties to pay their City utility bills. The program is possible due to generous utility customers making voluntary, tax-deductible donations used exclusively for low-income assistance. These donations are matched by the City of Salem up to a $10,000 maximum per year.

In 2016, a total of **$14,670.74** was distributed to **157** families and individuals who would have otherwise faced possible water service disruption. Currently, the donation amounts received are not enough to keep up with the low-income requests for distribution.

If you would like to donate to the Low-Income Utility Assistance Program or if you are in need of low-income assistance for your City of Salem utility bill, please visit our website at **www.cityofsalem.net** or contact Customer Services Utility Billing at **503-588-6099** for more information.

$14,670.74
was given to
157
low-income families

Stormwater Runoff vs. Wastewater: What's the Difference?

Salem has two separate drainage systems: one used to carry stormwater runoff, and the other to carry wastewater (sewage). Salem's wastewater system collects water used in homes, businesses, and schools and carries the water to a wastewater treatment facility where it is treated before the water is released into the Willamette River.

In some cities, the wastewater and stormwater systems are combined, but not in Salem. Salem's stormwater pipes are separate from the wastewater pipes. Unlike the sewer system, the stormwater system begins at the drains in the streets and leads directly to the nearest stream or to the Willamette River without treatment.

As stormwater runs off roofs, yards, and streets, it picks up pollutants on its path to the storm drain system, and eventually to the Willamette River. People fish, recreate, and use the Willamette as a source of drinking water. Fish and other aquatic animals depend on clean water as well. For these reasons, water pollution prevention is important! To learn more about what you can do to keep water clean, go to **www.cityofsalem.net/clean-streams**.

Want to Learn More?

US EPA

Safe Drinking Water Hotline

1-800-426-4791

www.epa.gov

Oregon Health Authority

Drinking Water Program

971-673-0405

http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater

(Salem's ID# 00731)

City of Salem Public Works Department

City of Salem Website

www.cityofsalem.net

Water Quality Hotline

503-588-6323

water@cityofsalem.net

Water Conservation Hotline

503-588-6323

water@cityofsalem.net

Water Outreach and Education Program

To arrange a classroom presentation, field trip, or community service project, call 503-588-6211

THE FEDERAL SAFE DRINKING WATER ACT requires this annual water quality report be made available to every customer to provide information regarding the quality of the community's drinking water. If you would like to receive a printed copy of this report, please call **503-588-6333**. If you have any questions or comments, please email **water@cityofsalem.net** or call the Water Quality Hotline at **503-588-6323**.

CITY OF Salem AT YOUR SERVICE
PUBLIC WORKS DEPARTMENT
1410 20TH STREET SE BLDG 2
SALEM OR 97302-1200

PWS – OR4100731

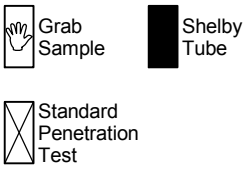
APPENDIX C

SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



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

N	**Standard Penetration Test Resistance (Blows/Ft.)**
(HP)	**Hand Penetrometer**
(T)	**Torvane**
(DCP)	**Dynamic Cone Penetrometer**
(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		**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			**BEDROCK**	
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1	< 20	Weathered
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4	20 - 29	Firm
Medium Dense	10 - 29	Medium-Stiff	0.50 to 1.00	4 - 8	30 - 49	Medium Hard
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15	50 - 79	Hard
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30	>79	Very Hard
		Hard	> 4.00	> 30		

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

Terracon

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.

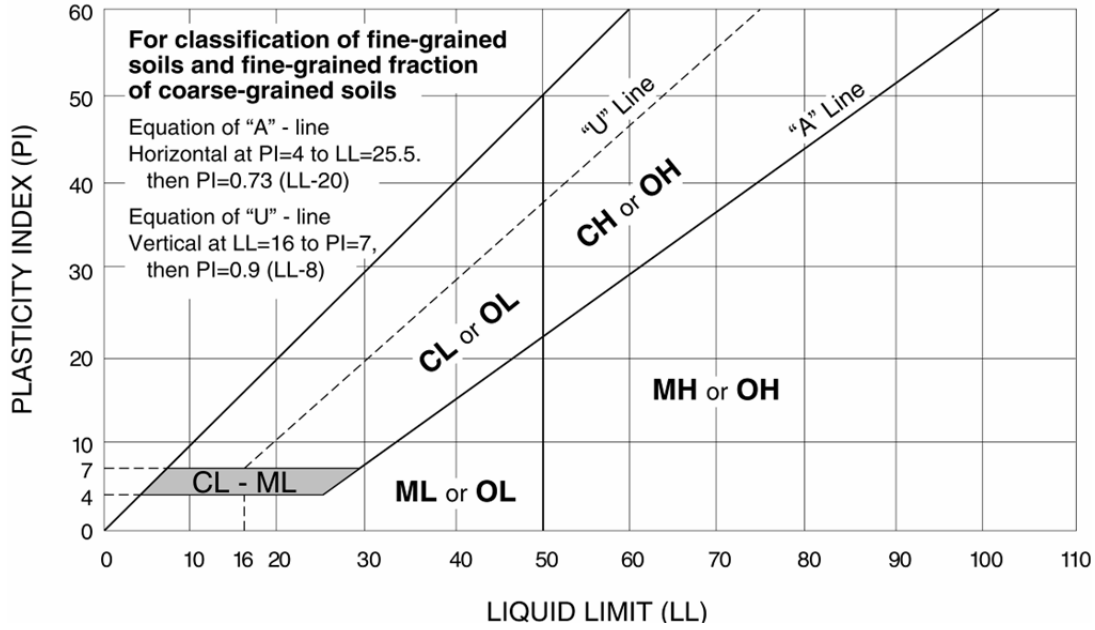
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[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.



Terracon

Exhibit C-2

APPENDIX D
GEOTECHNICAL INVESTIGATION SUMMARY CHECKLIST FOR COSTCO WHOLESALE PROJECTS

Geotechnical Investigation Summary Checklist for Costco Wholesale Projects

Geotechnical Investigation Summary Checklist

General Information

Costco Wholesale Real Estate Main Contact: Peter Kahn

Geotechnical Main Contact: James M. Schmidt, PE

Geotechnical Engineer of Record: Kristopher T. Hauck, PE

Project Location

CW #: 17-0460

Warehouse #:

Report Date: April 16, 2018

Consultant Project/Document Number: 49145137

Addendums (List):

Report Purpose: ☐ Preliminary ☐☐ Draft X Final ☐ Addendum/Revision

Geotechnical Investigation Summary Checklist	Yes	No or NA	Describe / Comments	Report Section
Pre-existing Conditions / Information				
Developer provided geotechnical report (describe):	☐	X		
Pre-existing development (describe)	☐	X	Previous grading onsite with fills on the order of up to 20 feet encountered in the borings.	4.1 and 4.2
Foundation type (describe):	X	☐	Spread footings	4.3
Performance Issues (describe):	☐	X		
Environmental Issues (describe)	☐	X	See Phase I ESA report	
Site Grading Records (stripping, compaction test results, field reports, etc.)	☐	X		
Typical Building Structural Design Criteria				
Other (describe): Fuel facility canopy				
Building size (describe): 160k Master Footprint				
Typical wall loading				
3,000 pounds per linear foot (1361 kilograms per 0.31 m) for Metal Buildings		☐		
4,500 pounds per linear foot (2041 kilograms per 0.31 m) CMU or pre-cast	X	☐		2.1
Typical column loading				
120,000 pounds (54430 kilograms) in non-snow regions	X	☐		2.1
150,000 pounds (68040 kilograms) in snow regions		☐		
Typical canopy loading: 50,000 pounds (22680 kilograms)	X	☐		2.1
Typical floor slab loading				

Geotechnical Investigation Summary Checklist	Yes	No or NA	Describe / Comments	Report Section
500 pounds per square foot (24 kPa), (psf, total)	X	☐		2.1
250 pounds per square foot (12kPa) (dead) at rack areas	X	☐		
150 pounds per square foot (7.2kPa) (dead) at non-rack areas	X	☐		
350 pounds per square foot (16.8kPa) (live)	X	☐		
Paving Design (twenty (20) year life)				
Heavy Duty paving shall accommodate thirty (30) trucks per day (Traffic Index of 7.0)	X	☐		4.7
Light Duty paving shall Accommodate 6,600 cars per day (Traffic Index of 5.0)	X	☐		4.7
Performance Grade (PG) binder oil identified for local climate conditions	X	☐		4.7
Site Grading Conditions/Assumptions				
Deviations to Typical Criteria (list / describe):	☐	X		
Design Finished Floor Elevation (FFE) (describe):	X	☐	EL 365 feet	2.1
Basis for FFE (assumed, per Civil) (describe):	X	☐	Green ink grading plan dated 3/16/2018 by DOWL.	2.1
Effects of change to assumed FFE (describe):	☐	X	None expected	
Maximum anticipated cuts (describe):	X	☐	12 feet or less	2.1
Maximum anticipated fills (describe):	X	☐	12 feet or less	2.1
Cross sections prepared for sites that are not essentially flat	X	☐		App A
Amount of import / export anticipated (describe):	☐	☐	Unknown	
Frost Depth (describe):	X	☐		4.3.1
Retaining walls				
Number of walls (describe):	X	☐	Near north and south sides of property	
Height / Length of walls (describe):	X	☐	About 7 to 33 feet (see civil)	
Wall construction / type (describe):	X	☐	Concrete/MSE	
Cut / fill transition in pad (describe):	X	☐	12 feet or less	2.1
Offsite Improvements (describe)	☐	X		
Fieldwork / Results				
Due Diligence Design Criteria				
Version (describe):	X	☐	2016 Costco Wholesale Development Requirements	
Followed Criteria?	X	☐		
Deviations to standard investigation (describe):	☐	X		
Groundwater				
Depth (describe):	X	☐	Elevation 343 feet at boring F-4	3.3
Perched	☐	X		
Expected seasonal fluctuation (describe):	X	☐	Unknown	3.4, 4.2.7, 4.4
Piezometers installed?	X	☐	Boring F-4 location	
Unusual / Challenging Soils conditions encountered				

Geotechnical Investigation Summary Checklist	Yes	No or NA	Describe / Comments	Report Section
Moisture-sensitive soils	X	☐		4.2.1
Undocumented fill	X	☐	SE and NE corner of building pad and NE corner of the site	4.1
Unsuitable soils (require removal)	☐	X		
Wet soils	☐	X		
Debris	☐	X		
Bedrock / potential non-rippable conditions	X	☐	Shallow rock in SW corner of site	4.2.4
Refusal	X	☐	Shallow rock in SW corner of site	4.2.4
Collapsible soils	☐	X		
Expansive soils	☐	X		
Compressible soils	☐	X		
Liquefaction	☐	X		
Sinkholes	☐	X		
Other (describe):	☐	X		
Potential Contamination Identified				
Soil	☐	X	See Phase I ESA	
Groundwater	☐	X	See Phase I ESA	
Restoration of Disturbed Areas				
Backfilled with soil	X	☐		
Backfilled with grout	☐	X		
Other (describe):	☐	X		
Topsoil samples collected / analyzed	X	☐		App B
Corrosivity testing performed/addressed	X	☐		App B
Culinary water quality testing performed	X	☐	City of Salem Public Works Department report	App B
Report				
Executive summary	X	☐		Ex Sum
Wet weather construction recommendations	X	☐		4.2.10
Pad winterization/pad recommendations	☐	X		
Frost protection recommendations	X	☐		4.3
Design Parameters				
Fill material parameters provided				
Structural fill (below foundations, slabs)	X	☐		4.2.2
Site grading fill (below pavements, flatwork)	X	☐		4.2.1, 4.5.2, 4.7.1
Select backfill (behind truck dock walls, foundations, grade beams, etc.)	X	☐		4.6
Trench backfill	X	☐		4.2.2
Drainage fill	☐	X		

Geotechnical Investigation Summary Checklist	Yes	No or NA	Describe / Comments	Report Section
Frost resistant fill	☐	X		
Slab base aggregate	X	☐	¾"-0 dense-graded aggregate base	4.5.1
Limits of debris / unsuitable removal provided	☐	X	NA	
Over-excavation / recompaction required				
Depth (describe):	X	☐	24"-36" remove and replace with select structural fill under footings 12" scarify, moisture condition, and recompact under pavements and floor slabs	4.3, 4.5, 4.7
Extent (include cross-section diagram)	X	☐		
Pad subgrade stabilization required (describe):	☐	X		
Surcharge				
Height (describe):	☐	X		
Lateral extent (describe):	☐	X		
Estimated duration (describe):	☐	X		
Shallow Foundations				
Pounds per square foot (kPa per m) allowable soil bearing pressure (describe):	X	☐	3,000 psf	4.3.1
Deep Foundations				
Type (describe):	☐	X		
Options and Value Engineering Matrix provided	☐	X		
Floor Slabs				
Unreinforced (>2500 pound per square foot) (>120 kPa)	X	☐		
Reinforced (describe why)	☐	X		
Subgrade modulus (pounds per square inch per inch (kPa / mm) (describe):	X	☐	150 pci	4.5.1
Base Material thickness:	X	☐	(minimum six (6) inch (152.4 mm)) (ODOT ¾"-o dense-graded aggregate base)	4.5.1
Seismic Conditions				
Governing Building Code (IBC, UBC, other)	X	☐	2014 Oregon Structural Specialty Code	
Geologic Hazard Identified	☐	X		
Proximity to earthquake fault zone(s)	☐	X		
Proximity to seismic hazard zone(s)	☐	X		
Potential for liquefaction	☐	X		
Potential for lateral spreading	☐	X		
Potential for seismic settlement	☐	X		
Potential for slope stability/landslides	☐	X		
Potential for ground shaking or geologic hazards	☐	X		
Retaining Walls	X	☐		4.6

Geotechnical Investigation Summary Checklist	Yes	No or NA	Describe / Comments	Report Section
Recommended Wall Types	☐	X		
Recommend Terracon Design	☐	☐	Unknown	
Lateral earth pressure design values				
Active:	X	☐		4.6
At-rest:	X	☐		4.6
Passive:	X	☐		4.6
Seismic:	X	☐		4.6
Backfill material, placement requirements	X	☐		4.6
Drainage requirements and cross-section drawing	X	☐		4.6
Finger Drains				
Required for frost	☐	X		
Recommended for long term maintenance and constructability	X	☐		4.7.2
Pavement				
Pavement subgrade stabilization required (describe):	☐	X		4.7.1
Asphalt mix design specified	X	☐		4.7.3
Heavy and light duty pavement sections specified	X	☐		4.7.3
Alternative pavement sections identified	X	☐	Rigid concrete	4.7.3
Specification for offsite pavement sections included	☐	X		
Data Gaps / Unknowns (describe):	X	☐	Subsurface information for planned retaining walls	4.12

STORMWATER CALCULATIONS

FOR

KUEBLER DEVELOPMENT

Prepared For:

Pacific Reality Associates, L.P.
15350 SW Sequoia Pkwy, Suite 300
Portland, OR 97224

Prepared By:

Westech Engineering, Inc.
3841 Fairview Ind. Dr. SE, Suite 100
Salem, OR 97302
(503) 585-2474 FAX: (503) 585-3986

JO # 2672

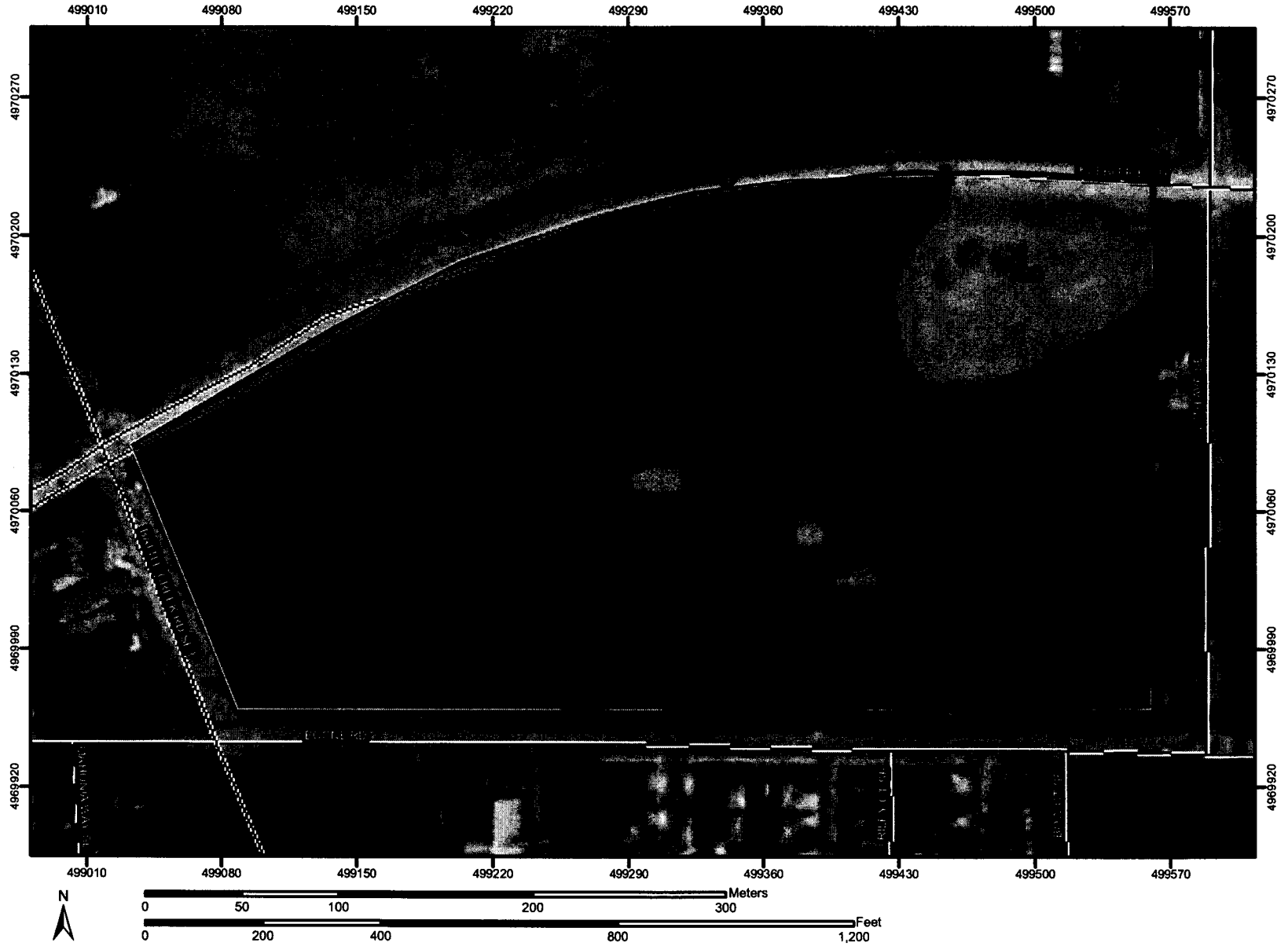
April 2010

TABLE OF CONTENTS

General Site Information

JO # 2672

April 2010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Meters
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Feet
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200
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800
1,200

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 5, Dec 22, 2006

Date(s) aerial images were photographed: 5/23/1994; 6/19/1994

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Marion County Area, Oregon				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
NeB	Nekia silty clay loam, 2 to 7 percent slopes	B	23.9	79.6%
NkC	Nekia stony silty clay loam, 2 to 12 percent slopes	C	2.7	9.0%
SlB	Salkum silty clay loam, basin, 0 to 6 percent slopes	B	3.4	11.4%
Totals for Area of Interest (AOI)			30.0	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

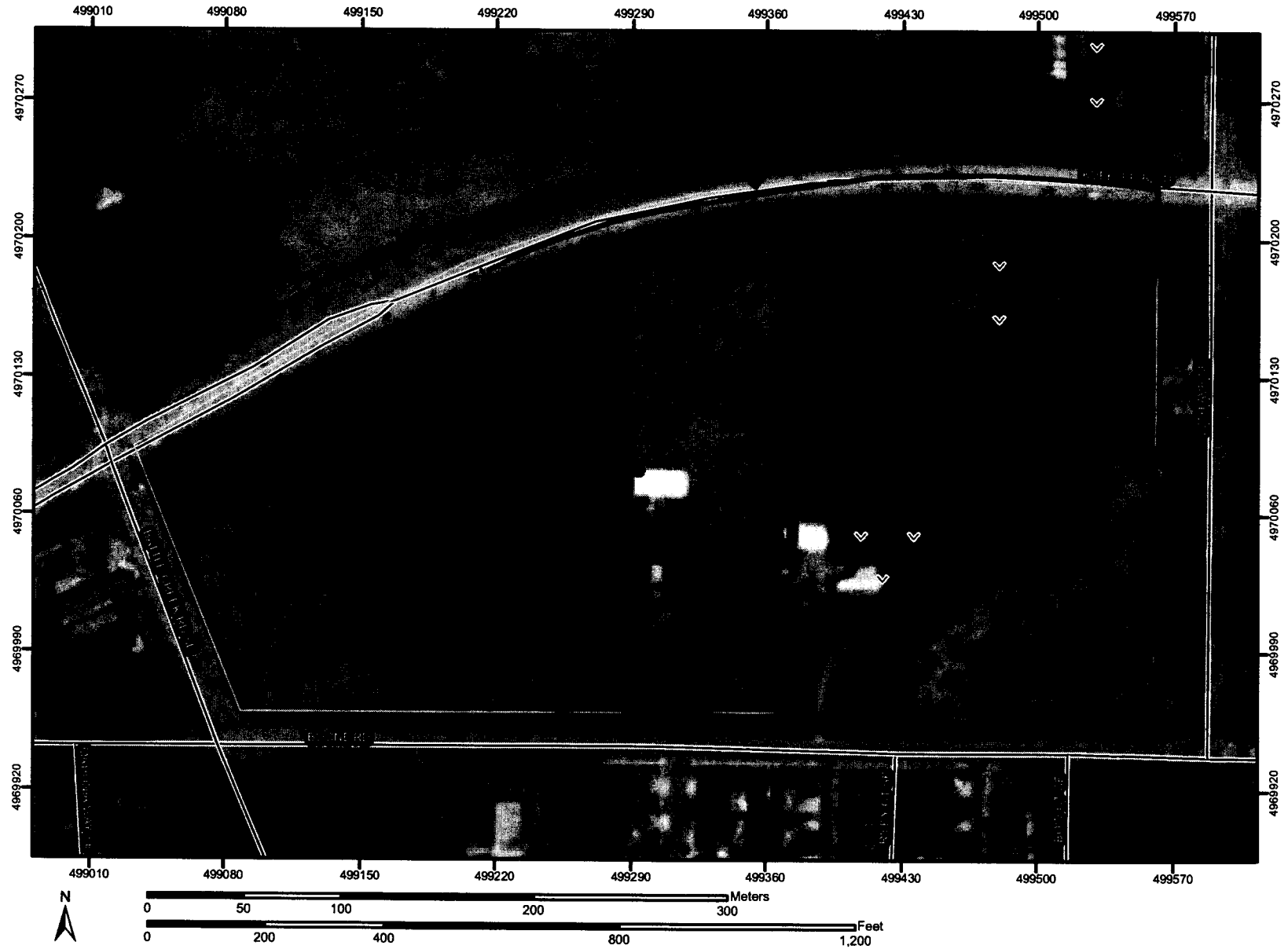
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Lower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N
Meters
0
50
100
200
300
Feet
0
200
400
800
1,200

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 5, Dec 22, 2006

Date(s) aerial images were photographed: 5/23/1994; 6/19/1994

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Marion County Area, Oregon (OR643)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
NeB	Nekia silty clay loam, 2 to 7 percent slopes	23.9	79.6%
NkC	Nekia stony silty clay loam, 2 to 12 percent slopes	2.7	9.0%
SlB	Salkum silty clay loam, basin, 0 to 6 percent slopes	3.4	11.4%
Totals for Area of Interest (AOI)		30.0	100.0%

Land Use Description on Input Screen	Description and Curve Numbers from TR-55					
	Cover Description		Curve Number for Hydrologic Soil Group			
	Cover Type and Hydrologic Condition	% Impervious Areas	A	B	C	D
Agricultural	Row Crops - Straight Rows + Crop Residue Cover-Good Condition (1)		64	75	82	85
Commercial	Urban Districts: Commercial and Business	85	89	92	94	95
Forest	Woods(2) - Good Condition		30	55	70	77
Grass/Pasture	Pasture, Grassland, or Range(3) - Good Condition		39	61	74	80
High Density Residential	Residential districts by average lot size: 1/8 acre or less	65	77	85	90	92
Industrial	Urban district: Industrial	72	81	88	91	93
Low Density Residential	Residential districts by average lot size: 1/2 acre lot	25	54	70	80	85
Open Spaces	Open Space (lawns, parks, golf courses, cemeteries, etc.)(4) Fair Condition (grass cover 50% to 70%)		49	69	79	84
Parking and Paved Spaces	Impervious areas: Paved parking lots, roofs, drive ways, etc. (excluding right-of-way)	100	98	98	98	98
Residential 1/8 acre	Residential districts by average lot size: 1/8 acre or less	65	77	85	90	92
Residential 1/4 acre	Residential districts by average lot size: 1/4 acre	38	61	75	83	87
Residential 1/3 acre	Residential districts by average lot size: 1/3 acre	30	57	72	81	86
Residential 1/2 acre	Residential districts by average lot size: 1/2 acre	25	54	70	80	85
Residential 1 acre	Residential districts by average lot size: 1 acre	20	51	68	79	84
Residential 2 acres	Residential districts by average lot size: 2 acre	12	46	65	77	82
Water/ Wetlands		0	0	0	0	0

Notes

(1) Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue on the land surface (good>=20%), and (e) degree of surface roughness.

(2) Good: Woods are protected form grazing, and litter and brush adequately cover the soil.

(3) Good: >75% ground cover and lightly or only occasionally grazed.

(4) CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

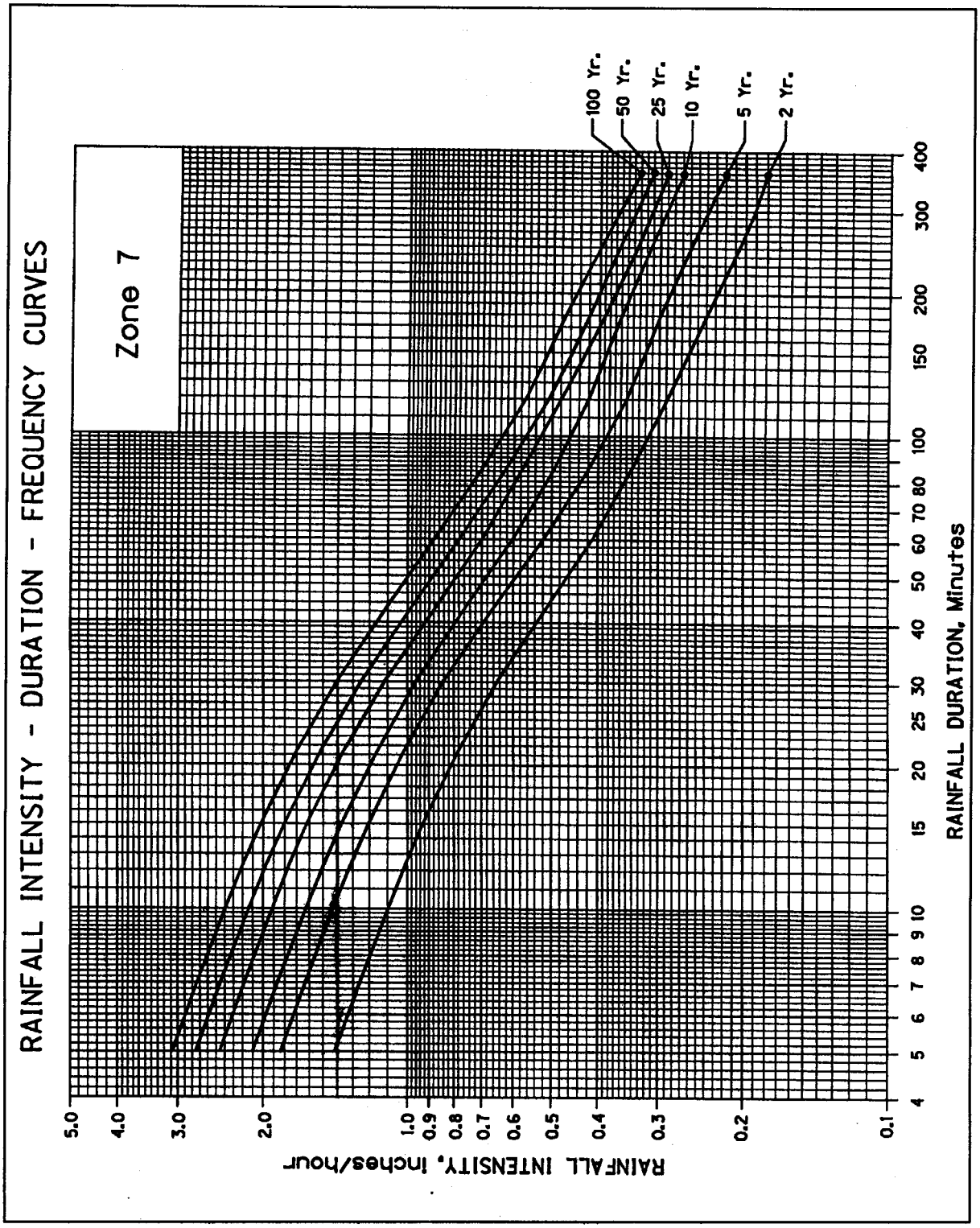

Figure 1: Rainfall Intensity - Duration - Frequency Curves

Pre-developed 5-YR EVENT & Detention Calculations

JO # 2672

April 2010

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS & PLANNERS

TIME OF CONCENTRATION CALC'S

BASIN length = 1180 FT , S = 2% , n = 0.30 (mixed)

ODOT ZONE 7 (SALEM)

FIRST 300 FT

Guess i → t_c

1 IN/HR → 44.7 MIN

0.66 IN/HR → 52.8 MIN

0.56 IN/HR → 56 MIN

0.54 IN/HR → 57 MIN

NEXT 880 LF. , SLOPE = 2% , $V_{OVERLAND}$ = 0.7 FT/S

(CITY OF SALEM, STORMWATER STDS, FIG. #2)

$$\frac{880\ FT}{0.7\ FT/S} = 1257\ S = 21\ MIN$$

$$T_{C_{TOTAL}} = 57 + 21 = 78\ MIN \Rightarrow 0.44\ IN/HR$$

J.O.:	2672.0000.0	Date:	3-10-2010
Project:	Kuebler - PacTrust		
By:	JW	Checked:	
Sheet	1 of 1		

CITY OF SALEM REQUIRED DETENTION VOLUME

Client:	PAC-TRUST	Date:	7-Aug-07
Project Name:	Kuebler Development	Job Number:	2672.00

Developed Conditions		Undeveloped (Historic) Condtions	
Storm Frequency, years	50	Storm Frequency, years	5
A, Impervious Surface Area, Acres	19.10	A, Total Area, Acres	21.22
C, Runoff Coefficient, Impervious Surface	0.90	C, Runoff Coefficient	0.20
A, Pervious Surface Area, Acres	2.12	n, Manning's Roughness Coefficient	0.30
C, Runoff Coefficient, Pervious Surface	0.17	I, Rainfall Intensity, inches/hour	0.42
Cav, Weighted Average Runoff Coefficient	0.83	S, Slope, percent	2.00
A, Total Area, Acres	21.22	L, Length, feet	1180
Detention Overflow Elevation, feet	139.00	T, Time of Concentration, minutes	78
Outlet Pipe Invert Elevation, feet	134.50	Q, Allowable Outflow, cfs	1.78
H, Maximum Head, feet	4.50		
D, Orifice Diameter, inches	5.7		

Time (minutes)	C * A (Acres)	Rainfall Intensity (in/hr)	Inflow (cfs)	Accumulated Inflow Volume (cubic feet)	Outflow (cfs)	Accumulated Outflow Volume (cubic feet)	Required Detention Volume (cubic feet)
5	17.55	2.75	48.26	14479	1.78	535	13944
6	17.55	2.60	45.63	16427	1.78	642	15785
7	17.55	2.45	43.00	18059	1.78	749	17311
8	17.55	2.35	41.24	19797	1.78	856	18941
9	17.55	2.24	39.31	21229	1.78	963	20266
10	17.55	2.15	37.73	22640	1.78	1069	21571
15	17.55	1.80	31.59	28432	1.78	1604	26827
20	17.55	1.57	27.55	33065	1.78	2139	30926
25	17.55	1.39	24.40	36593	1.78	2674	33919
30	17.55	1.25	21.94	39488	1.78	3208	36280
35	17.55	1.11	19.48	40910	1.78	3743	37167
40	17.55	1.02	17.90	42963	1.78	4278	38685
45	17.55	0.94	16.50	44543	1.78	4813	39730
50	17.55	0.88	15.44	46333	1.78	5347	40986
55	17.55	0.83	14.57	48071	1.78	5882	42188
60	17.55	0.78	13.69	49282	1.78	6417	42865
70	17.55	0.71	12.46	52335	1.78	7486	44849
80	17.55	0.65	11.41	54757	1.78	8556	46201
90	17.55	0.60	10.53	56863	1.78	9625	47238
100	17.55	0.56	9.83	58969	1.78	10695	48274
110	17.55	0.54	9.48	62550	1.78	11764	50785
120	17.55	0.51	8.95	64445	1.78	12834	51611
130	17.55	0.49	8.60	67078	1.78	13903	53174
140	17.55	0.47	8.25	69289	1.78	14973	54316
150	17.55	0.46	8.04	72343	1.78	16042	56300
200	17.55	0.40	7.02	84242	1.78	21390	62852
250	17.55	0.36	6.32	94772	1.78	26737	68035
300	17.55	0.34	5.97	107408	1.78	32085	75324
350	17.55	0.31	5.44	114253	1.78	37432	**76821**

Water Quality Calculations

JO # 2672

April 2010

TYPE 1A RAINFALL

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.000	.002	.004	.006	.008
.5000	.010	.012	.014	.016	.018
1.0000	.020	.023	.026	.029	.032
1.5000	.035	.038	.041	.044	.047
2.0000	.050	.053	.056	.060	.063
2.5000	.066	.069	.072	.076	.079
3.0000	.082	.085	.088	.091	.095
3.5000	.098	.101	.105	.109	.112
4.0000	.116	.120	.123	.127	.131
4.5000	.135	.139	.143	.147	.152
5.0000	.156	.161	.165	.170	.175
5.5000	.180	.185	.190	.195	.200
6.0000	.206	.212	.218	.224	.231
6.5000	.237	.243	.249	.255	.261
7.0000	.268	.275	.283	.291	.300
7.5000	.310	.331	.355	.379	.403
8.0000	.425	.439	.452	.462	.472
8.5000	.480	.489	.498	.505	.513
9.0000	.520	.527	.533	.539	.545
9.5000	.550	.556	.561	.567	.572
10.0000	.577	.582	.587	.592	.596
10.5000	.601	.606	.610	.615	.620
11.0000	.624	.628	.633	.637	.641
11.5000	.645	.649	.653	.657	.660
12.0000	.664	.668	.671	.675	.679
12.5000	.683	.687	.690	.694	.697
13.0000	.701	.705	.708	.712	.716
13.5000	.719	.722	.726	.729	.733
14.0000	.736	.739	.743	.746	.749
14.5000	.753	.756	.759	.763	.766
15.0000	.769	.772	.776	.779	.782
15.5000	.785	.788	.792	.795	.798
16.0000	.801	.804	.807	.810	.813
16.5000	.816	.819	.822	.825	.828
17.0000	.831	.834	.837	.840	.843
17.5000	.846	.849	.851	.854	.857
18.0000	.860	.863	.865	.868	.871
18.5000	.874	.876	.879	.882	.884
19.0000	.887	.890	.892	.895	.897
19.5000	.900	.903	.905	.908	.910
20.0000	.913	.915	.918	.920	.922
20.5000	.925	.927	.930	.932	.934
21.0000	.937	.939	.941	.944	.946
21.5000	.948	.951	.953	.955	.957

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
22.0000	.959	.962	.964	.966	.968
22.5000	.970	.972	.974	.976	.978
23.0000	.980	.982	.984	.986	.988
23.5000	.990	.992	.994	.996	.998
24.0000	1.000				

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RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	Impervious Adjustment %UC	Adjusted CN
Impervious	98	19.100			98.00
Perviouis	79	2.120			79.00
COMPOSITE AREA & WEIGHTED CN --->		21.220			96.10 (96)

MASTER DESIGN STORM SUMMARY

Network Storm Collection: Salem

Return Event	Total Depth in	Rainfall Type	RNF ID
2	2.5000	Synthetic Curve	TypeIA 24hr
5	3.0000	Synthetic Curve	TypeIA 24hr
10	3.4000	Synthetic Curve	TypeIA 24hr
25	3.9000	Synthetic Curve	TypeIA 24hr
50	4.4000	Synthetic Curve	TypeIA 24hr
100	4.5000	Synthetic Curve	TypeIA 24hr
1	.8300	Synthetic Curve	TypeIA 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
*OUT 10	JCT	2	3.645		7.9000	11.43		
*OUT 10	JCT	5	4.513		7.8500	14.11		
*OUT 10	JCT	10	5.210		7.8500	16.24		
*OUT 10	JCT	25	6.085		7.8500	18.90		
*OUT 10	JCT	50	6.961		7.8500	21.54		
*OUT 10	JCT	100	7.137		7.8500	22.07		
*OUT 10	JCT	1	.847		7.9000	2.51		
POST DEVELOPED	AREA	2	3.645		7.9000	11.43		
POST DEVELOPED	AREA	5	4.513		7.8500	14.11		
POST DEVELOPED	AREA	10	5.210		7.8500	16.24		
POST DEVELOPED	AREA	25	6.085		7.8500	18.90		
POST DEVELOPED	AREA	50	6.961		7.8500	21.54		
POST DEVELOPED	AREA	100	7.137		7.8500	22.07		
POST DEVELOPED	AREA	1	.847		7.9000	2.51		

← water quality flow

$t_c = 5 min$

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS & PLANNERS

STORM FILTER QUANTITY CALCULATIONS

* CALCULATED WQ FLOW = 2.51 CFS.
* PREDEVELOPED RELEASE RATE = 1.78 CFS.

⇒ SINCE WQ TREATMENT IS DOWNSTREAM OF DETENTION, WE WILL SIZE THE WQ TREATMENT FACILITY TO TREAT THE PREDEVELOPED RELEASE RATE (1.74 CFS), WHICH EFFECTIVELY WILL TREAT UPTO THE 50YR STORM.

EACH CARTRIDGE Q_{MAX} = 15 GPM = 0.033 CFS

$$\#\ \text{CARTRIDGES} = \frac{1.78\ \text{CFS}}{\frac{0.033\ \text{CFS}}{\text{CARTRIDGE}}} = 53.9 \Rightarrow \boxed{54\ \text{CARTRIGES}}$$

J.O.:	Date:
Project:	
By:	Checked:
Sheet of	

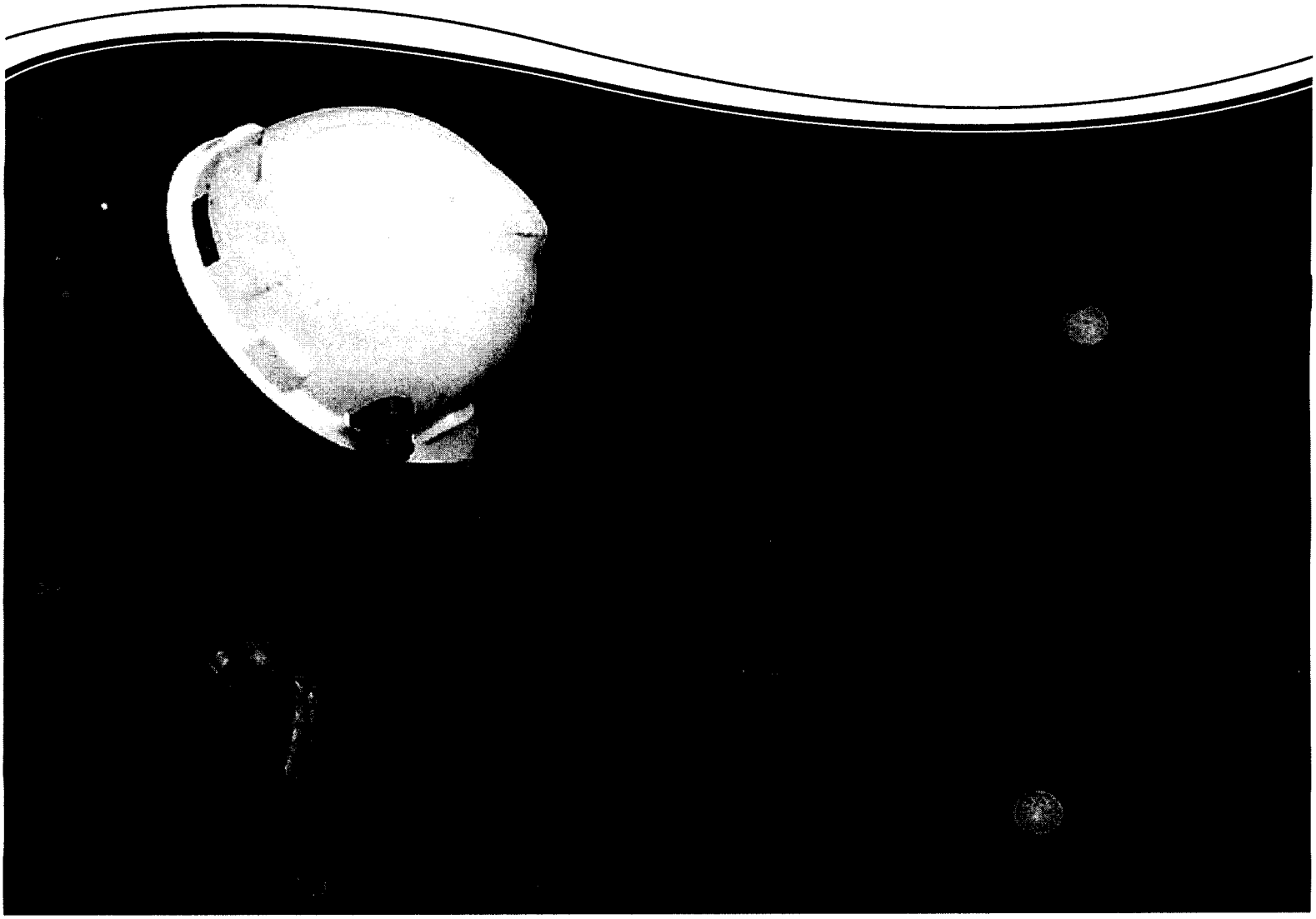
Civil Drawings

JO # 2672

April 2010

CONTECH
STORMWATER SOLUTIONS

StormFilter Inspection and Maintenance Procedures



The Stormwater Management StormFilter®

Maintenance Guidelines

The primary purpose of the Stormwater Management StormFilter® is to filter out and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site. Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is a good practice to inspect the system after major storm events.

Maintenance Procedures

Although there are likely many effective maintenance options, we believe the following procedure is efficient and can be implemented using common equipment and existing maintenance protocols. A two step procedure is recommended as follows:

1. Inspection

Inspection of the vault interior to determine the need for maintenance.

2. Maintenance

Cartridge replacement

Sediment removal

Inspection and Maintenance Timing

At least one scheduled inspection should take place per year with maintenance following as warranted.

First, an inspection should be done before the winter season. During the inspection the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, a maintenance (replacement of the filter cartridges and removal of accumulated sediments) should be performed during periods of dry weather.

In addition to these two activities, it is important to check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the inspection/ maintenance schedule depending on the actual operating conditions encountered by the system. In general, inspection activities can be conducted at any time, and maintenance should occur, if warranted, in late summer to early fall when flows into the system are not likely to be present.

Maintenance Frequency

The primary factor controlling timing of maintenance of the StormFilter is sediment loading.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will naturally decrease as more and more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on a routine as-needed basis in order to prevent material from being re-suspended and discharged to the StormFilter treatment system.

Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction may need to be inspected and maintained more often than those with fully stabilized surface conditions.

The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after major storms. Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system or site. It is recommended that the site owner develop a database to properly manage StormFilter inspection and maintenance programs.

Prior to the development of the maintenance database, the following maintenance frequencies should be followed:

Inspection

One time per year

After major storms

Maintenance

As needed, based on results of inspection (The average maintenance lifecycle is approximately 1-3 years)

Per Regulatory requirement

In the event of a chemical spill

Frequencies should be updated as required. The recommended initial frequency for inspection is one time per year. StormFilter units should be inspected after major storms.

Sediment removal and cartridge replacement on an as needed basis is recommended unless site conditions warrant.

Once an understanding of site characteristics has been established, maintenance may not be needed for one to three years, but inspection is warranted and recommended annually.

Inspection Procedures

The primary goal of an inspection is to assess the condition of the cartridges relative to the level of visual sediment loading as it relates to decreased treatment capacity. It may be desirable to conduct this inspection during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and CONTECH Stormwater Solutions immediately.

To conduct an inspection:

Important: Inspection should be performed by a person who is familiar with the operation and configuration of the StormFilter treatment unit.

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.

3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.
5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to weather or not maintenance is needed.

Maintenance Decision Tree

The need for maintenance is typically based on results of the inspection. The following Maintenance Decision Tree should be used as a general guide. (Other factors, such as Regulatory Requirements, may need to be considered)

1. Sediment loading on the vault floor.
   a. If >4" of accumulated sediment, maintenance is required.
2. Sediment loading on top of the cartridge.
   a. If >1/4" of accumulation, maintenance is required.
3. Submerged cartridges.
   a. If >4" of static water in the cartridge bay for more that 24 hours after end of rain event, maintenance is required.
4. Plugged media.
   a. If pore space between media granules is absent, maintenance is required.
5. Bypass condition.
   a. If inspection is conducted during an average rain fall event and StormFilter remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), maintenance is required.
6. Hazardous material release.
   a. If hazardous material release (automotive fluids or other) is reported, maintenance is required.
7. Pronounced scum line.
   a. If pronounced scum line (say ≥ 1/4" thick) is present above top cap, maintenance is required.
8. Calendar Lifecycle.
   a. If system has not been maintained for 3 years maintenance is required.

Assumptions

- No rainfall for 24 hours or more
- No upstream detention (at least not draining into StormFilter)
- Structure is online
- Outlet pipe is clear of obstruction
- Construction bypass is plugged

Maintenance

Depending on the configuration of the particular system, maintenance personnel will be required to enter the vault to perform the maintenance.

Important: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows is occurring.

Replacement cartridges can be delivered to the site or customers facility. Information concerning how to obtain the replacement cartridges is available from CONTECH Stormwater Solutions.

Warning: In the case of a spill, the maintenance personnel should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and CONTECH Stormwater Solutions immediately.

To conduct cartridge replacement and sediment removal maintenance:

1. If applicable, set up safety equipment to protect maintenance personnel and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

Method 1:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Unscrew (counterclockwise rotations) each filter cartridge from the underdrain connector. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact CONTECH Stormwater Solutions for suggested attachment devices.

Important: Note that cartridges containing leaf media (CSF) do not require unscrewing from their connectors. Take care not to damage the manifold connectors. This connector should remain installed in the manifold and could be capped during the maintenance activity to prevent sediments from entering the underdrain manifold.

B. Remove the used cartridges (up to 250 lbs. each) from the vault.

Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner unless CONTECH Stormwater Solutions performs the maintenance activities and damage is not related to discharges to the system.

C. Set the used cartridge aside or load onto the hauling truck.

D. Continue steps a through c until all cartridges have been removed.

Method 2:

A. Enter the vault using appropriate confined space protocols.

B. Unscrew the cartridge cap.

C. Remove the cartridge hood screws (3) hood and float.

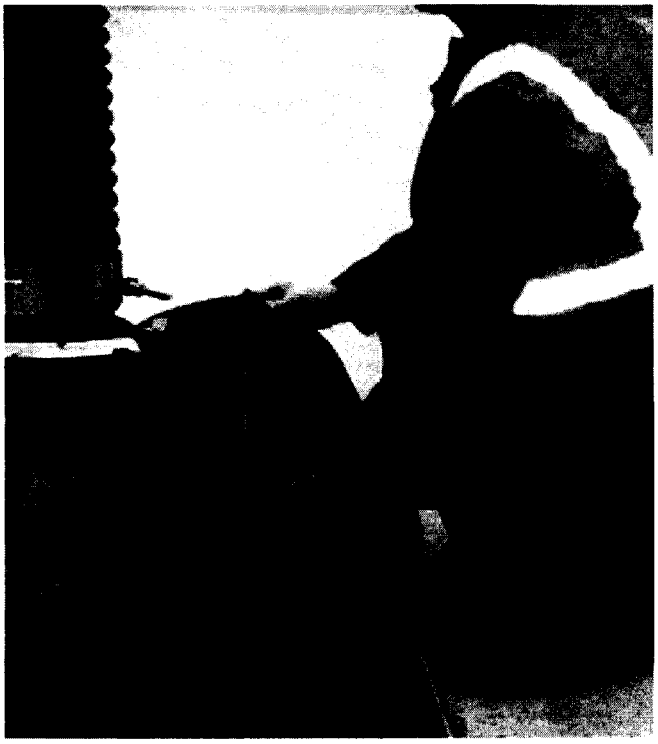
D. At location under structure access, tip the cartridge on its side.

Important: Note that cartridges containing media other than the leaf media require unscrewing from their threaded connectors. Take care not to damage the manifold connectors. This connector should remain installed in the manifold and capped if necessary.

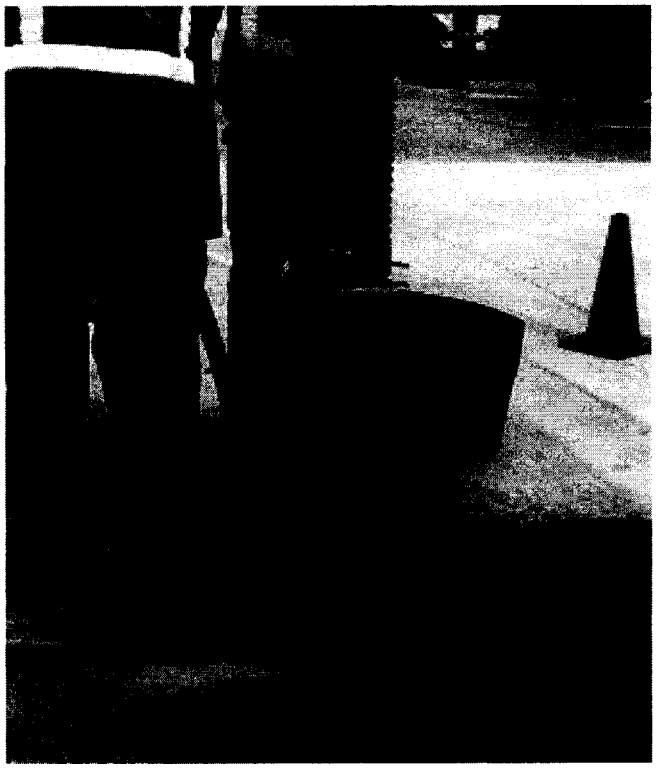
D. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.

E. Set the empty, used cartridge aside or load onto the hauling truck.

F. Continue steps a through e until all cartridges have been removed.



8. Remove accumulated sediment from the floor of the vault and from the forebay. This can most effectively be accomplished by use of a vacuum truck.
9. Once the sediments are removed, assess the condition of the vault and the condition of the connectors. The connectors are short sections of 2-inch schedule 40 PVC, or threaded schedule 80 PVC that should protrude about 1" above the floor of the vault. Lightly wash down the vault interior.
    a. If desired, apply a light coating of FDA approved silicon lube to the outside of the exposed portion of the connectors. This ensures a watertight connection between the cartridge and the drainage pipe.
    b. Replace any damaged connectors.
10. Using the vacuum truck boom, crane, or tripod, lower and install the new cartridges. Once again, take care not to damage connections.
11. Close and fasten the door.
12. Remove safety equipment.
13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used empty cartridges to CONTECH Stormwater Solutions.



Related Maintenance Activities -

Performed on an as-needed basis

StormFilter units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the StormFilter to be successful, it is imperative that all other components be properly maintained. The maintenance/repair of upstream facilities should be carried out prior to StormFilter maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.

Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

CONTECH STORMWATER SOLUTIONS
800.925.5240
contechstormwater.com

Support

- Drawings and specifications are available at contechstormwater.com.
- Site-specific design support is available from our engineers.

CONTECH Construction Products Inc. provides site solutions for the civil engineering industry. CONTECH's portfolio includes bridges, drainage, sanitary sewer, stormwater and earth stabilization products. For information on other CONTECH division offerings, visit contech-cpi.com or call 800.338.1122

Inspection Report

Date: _____ Personnel: _____

Location: _____ System Size: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other ☐

Sediment Thickness in Forebay: _____ Date: _____

Sediment Depth on Vault Floor: _____

Structural Damage: _____

Estimated Flow from Drainage Pipes (if available): _____

Cartridges Submerged: Yes ☐ No ☐ Depth of Standing Water: _____

StormFilter Maintenance Activities (check off if done and give description)

☐ Trash and Debris Removal: _____

☐ Minor Structural Repairs: _____

☐ Drainage Area Report _____

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

Items Needing Further Work: _____

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals.

Other Comments:

_____

_____

_____

_____

_____

_____

_____

_____

Review the condition reports from the previous inspection visits.

StormFilter Maintenance Report

Date: _____ Personnel: _____

Location: _____ System Size: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other ☐

List Safety Procedures and Equipment Used: _____

_____

_____

System Observations

Months in Service:

Oil in Forebay: Yes ☐ No ☐

Sediment Depth in Forebay: _____

Sediment Depth on Vault Floor: _____

Structural Damage: _____

Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

StormFilter Cartridge Replacement Maintenance Activities

Remove Trash and Debris: Yes ☐ No ☐ Details: _____

Replace Cartridges: Yes ☐ No ☐ Details: _____

Sediment Removed: Yes ☐ No ☐ Details: _____

Quantity of Sediment Removed (estimate?):

Minor Structural Repairs: Yes ☐ No ☐ Details: _____

Residuals (debris, sediment) Disposal Methods: _____

Notes:

_____

_____

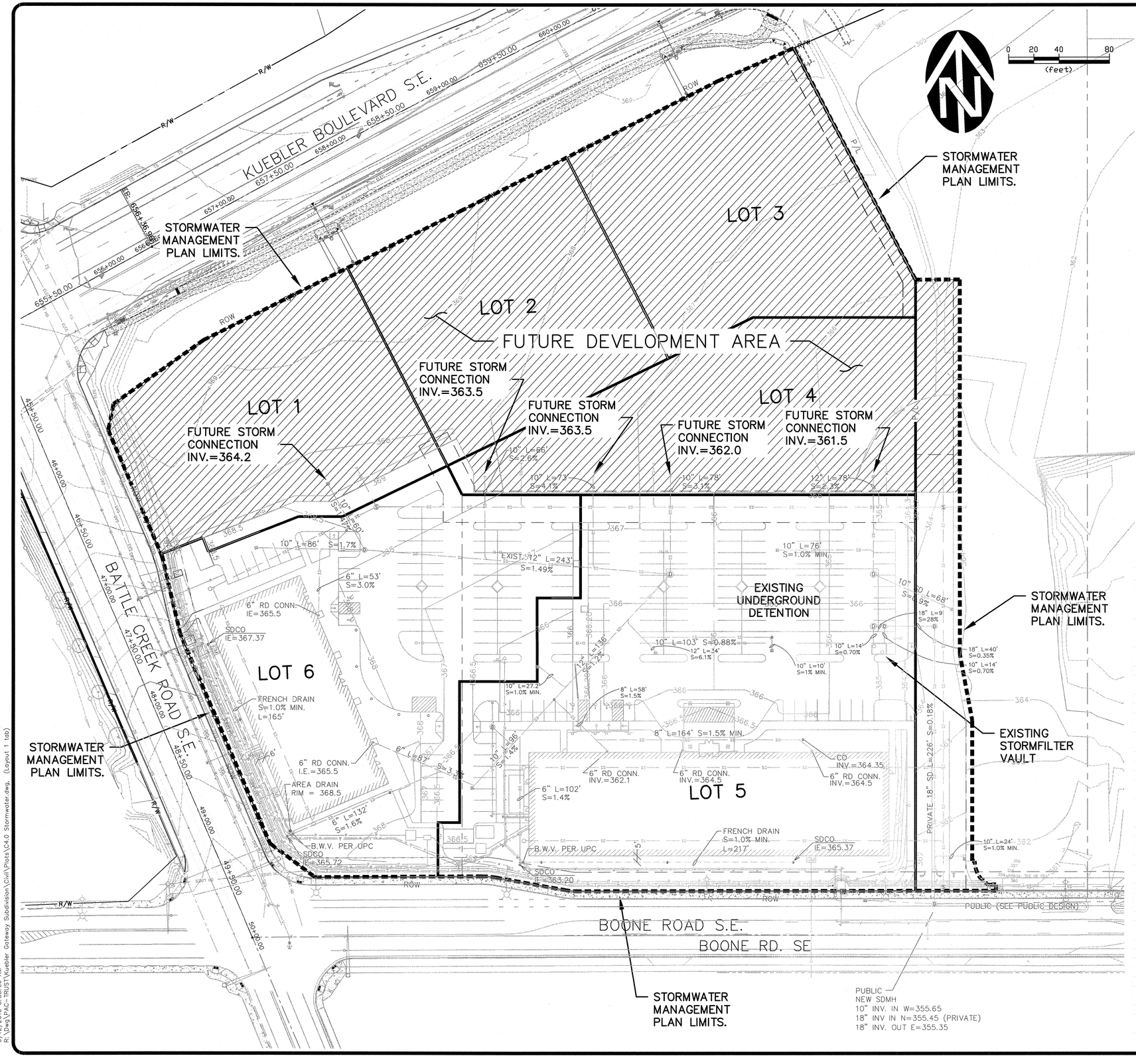
_____

_____

_____

_____

_____



STORMWATER NARRATIVE

Stormwater Management Plan Narrative

Summary:

The existing stormwater detention and water quality treatment system is sized for the Stormwater Management Plan limits at buildout including all future impervious areas, per the specifications below.

Detention Requirements:

Provide detention for the difference between the 5 yr predeveloped storm event and the 50 yr developed storm event based on the rational method at buildout.

- Existing Detention Required (see spreadsheet) = 21, 382 CF
- Existing Detention Provided = 23,000 CF

Stormwater Quality Treatment Requirements:

- Existing Stormwater Treatment Required = None Required
- Existing Stormwater Treatment Provided = ConTech StormFilter Vault sized to treat 0.86 cfs (equal to the detention 5 yr predeveloped release rate)

Future Development Detention & Treatment Requirements

Stormwater detention and water quality is provided for the entire subdivision at buildout. However, Green Stormwater Infrastructure (GSI) filtration BMP's will be provided for an imperious area equal to 50% of building footprint for lots 1 -4 (as shown on this plan) if a building is constructed. GSI will be located somewhere on each lot and will be constructed at the time of development of each lot. The GSI will be designed to filter a 1.38 inch storm over 24 hours (Type IA) using the Santa Barbara Unit Hydrograph Method and assume a 2 inch/hour media filtration rate. GSI will be planted with approved plantings. Storms of additional size will overflow and enter the existing stormwater system. A minimum of 18 inches of filtration media (as approved by the City) and underdrain system will be provided in each GSI to convey filtered water to the existing system. No additional stromwater detention or stormwater quality treatment requirements are required.

STORMWATER DETENTION CALC'S

FOR EXISTING UNDERGROUND DETENTION

CITY OF SALEM REQUIRED DETENTION VOLUME

Client: PAC-TRUST		Date: 23-Aug-12	
Project Name: Kuebler Development		Job Number: 2672.00	
Developed Conditions		Undeveloped (Historic) Conditions	
Storm Frequency, years	50	Storm Frequency, years	5
A, Impervious Surface Area, Acres	6.50	A, Total Area, Acres	7.57
C, Runoff Coefficient, Impervious Surface	0.90	C, Runoff Coefficient	0.20
A, Pervious Surface Area, Acres	1.07	n, Manning's Roughness Coefficient	0.30
C, Runoff Coefficient, Pervious Surface	0.17	I, Rainfall Intensity, inches/hour	0.57
Cav, Weighted Average Runoff Coefficient	0.80	S, Slope, percent	3.23
A, Total Area, Acres	7.57	L, Length, feet	650
Detention Overflow Elevation, feet	364.00	T, Time of Concentration, minutes	57
Outlet Pipe Invert Elevation, feet	358.00	Q, Allowable Outflow, cfs	0.86
H, Maximum Head, feet	6.00		
D, Orifice Diameter, inches	3.7		

Time (minutes)	C * A (Acres)	Rainfall Intensity (in/hr)	Inflow (cfs)	Accumulated Inflow Volume (cubic feet)	Outflow (cfs)	Accumulated Outflow Volume (cubic feet)	Required Detention Volume (cubic feet)
5	6.03	2.75	16.59	4976	0.86	259	4717
6	6.03	2.60	15.68	5646	0.86	311	5335
7	6.03	2.45	14.78	6207	0.86	362	5844
8	6.03	2.35	14.17	6804	0.86	414	6390
9	6.03	2.24	13.51	7296	0.86	466	6830
10	6.03	2.15	12.97	7781	0.86	518	7263
15	6.03	1.80	10.86	9772	0.86	777	8995
20	6.03	1.57	9.47	11364	0.86	1036	10329
25	6.03	1.39	8.38	12577	0.86	1294	11282
30	6.03	1.25	7.54	13572	0.86	1553	12018
35	6.03	1.11	6.70	14060	0.86	1812	12248
40	6.03	1.02	6.15	14766	0.86	2071	12695
45	6.03	0.94	5.67	15309	0.86	2330	12979
50	6.03	0.88	5.31	15924	0.86	2589	13335
55	6.03	0.83	5.01	16521	0.86	2848	13674
60	6.03	0.78	4.70	16938	0.86	3107	13831
70	6.03	0.71	4.28	17987	0.86	3625	14363
80	6.03	0.65	3.92	18820	0.86	4142	14677
90	6.03	0.60	3.62	19543	0.86	4660	14883
100	6.03	0.56	3.38	20267	0.86	5178	15089
110	6.03	0.54	3.26	21498	0.86	5696	15802
120	6.03	0.51	3.08	22149	0.86	6213	15936
130	6.03	0.49	2.96	23054	0.86	6731	16323
140	6.03	0.47	2.83	23814	0.86	7249	16565
150	6.03	0.46	2.76	24863	0.86	7767	17097
200	6.03	0.40	2.41	28953	0.86	10356	18597
250	6.03	0.36	2.17	32572	0.86	12945	19628
300	6.03	0.34	2.05	36915	0.86	15534	**21382**
350	6.03	0.31	1.87	39268	0.86	18123	21145

NO.	DATE	DESCRIPTION	BY
2	6-9-15	PER C.O.S. COMMENTS	TN
1	4-24-15	PER C.O.S. COMMENTS	TN

REVISIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DSN. JW
DRN. TSN
CKD. JW
DATE: MAY 2014

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 12, 1983
WILLIAM J. WELLS
RENEWS: 6/30/2016

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2474 Fax: (503) 585-3986
E-mail: westech@westech-eng.com

M & T PARTNERS
KUEBLER GATEWAY SUBDIVISION PLAN

STORMWATER MANAGEMENT PLAN

DRAWING
C4.0

JOB NUMBER
2672.6007.0

STORMWATER CALCULATIONS

Prepared For:

PacTrust

15350 SW Sequoia Parkway

Portland, OR 97224

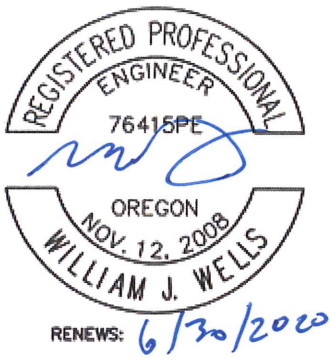
Project:

PacTrust Kuebler Development
Phase 2 Offsite Buildout – Public Improvements

Salem, OR 97306

Permit Number: CO -

Prepared By:



Westech Engineering, Inc.
3841 Fairview Industrial Drive SE, Suite 100
Salem, OR 97302
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J.O. 2672.8000.0

Updated November 2018

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APPENDICES

PROJECT OVERVIEW & DESCRIPTION

1.1 SIZE & LOCATION OF PROJECT

The proposed public improvements project has several locations around the 2500-2600 block of Boone Rd SE. The sum of the improvement project areas is approximately 110,400 square feet. Refer to the Overall Stormwater Map in Appendix B and Civil Drawings for site maps of the project area.

1.2 BRIEF DESCRIPTION OF PROJECT SCOPE AND PROPOSED IMPROVEMENTS

The project scope includes several public improvements around the 2500-2600 block of Boone Rd SE. Improvements include a traffic signal at the Boone Rd SE and Battle Creek Rd intersection with the addition of a left turn lane at the west side of the intersection on Boone Rd, widening approximately 650 feet of the north side of Boone Rd from its intersection with 27th Ave SE to the west, and widening 27th Ave SE from Boone Rd SE to Kuebler Blvd with a roundabout interchange.

Associated stormwater improvements include ROW planters along the 27th Ave roundabout. Existing stormwater facilities recently constructed with the City's Kuebler Blvd Widening projects (Kuebler Widening) are also utilized.

1.3 DESCRIPTION AND SIZE OF WATERSHED DRAINING TO THE SITE

Of the 110,400 square foot project area, 68,360 square feet is new or replaced development requiring stormwater treatment and detention. Much of the proposed roadway improvements are a grind and inlay of the existing streets which do not require stormwater management per City Standards. The 68,360 square feet of new or replaced development does not include the 650 feet of street widening along Boone Rd. This improvmenet drains to an existing swale and has already been permitted through wetland permitting and therefore does not require additional stormwater facilities.

Stormwater runoff is managed by proposed facilities in 27th Ave and existing facilities along Kuebler Blvd. Methods of stormwater treatment and detention are discussed further in Section 3 of this report.

Ground surface adjacent to the western edge of the proposed 27th Ave improvements drains to the street by overland flow under existing conditions. However, the proposed future shopping development on the property will be graded to drain a majority of runoff away from 27th Ave and will connect to storm drains downstream of the proposed 27th Ave stormwater facilities. A portion of the driveway to the future shopping development (4,080 square feet) will drain to the proposed 27th Ave stormwater facilities. This drainage will be over-detained and over-treated by the shopping development and therefore will pass through the 27th Ave facilities undetained. Refer to the Grading and Storm Drainage Plans of the Kuebler Gateway Shopping Center drawings.

1.4 DESCRIPTION OF THE EXISTING SITE CONDITIONS, CONSTRAINTS, SENSITIVE AREAS & WATERWAYS

The existing improvement sites along Boone Rd and 27th Ave are collector streets with drainage ditches. There are no existing sensitive areas or waterways.

1.5 SUMMARY OF EXISTING TREES & NATIVE VEGETATION

The existing sites are predominately paved roadway. The 27th Ave and Boone Rd widening sites have existing shrubs and grasses along roadside drainage ditches. The Boone Rd/Battle Creek Rd intersection improvement has shrubs and several mature trees bordering Boone Rd to be protected. No existing trees are removed by the proposed project.

1.6 SUMMARY OF GREEN STORMWATER INFRASTRUCTURE

Per Appendix 4E of the City of Salem Design Standards, a large project will be considered to have met the maximum extent feasible (MEF) requirement when the stormwater runoff from the total amount of new plus replaced impervious surfaces flows into an area set aside for GSI that is at least 10% of the total area of the new plus replaced impervious surfaces or at least 80% of all impervious area is treated by GSI. This design provides GSI treatment for an area greater than the equivalent disturbed area, therefore meeting MEF for GSI.

1.7 REGULATORY PERMITS REQUIRED

A 1200-C permit from DEQ will be required since more than one acre is disturbed by the project. City of Salem permits are also required. No other permits are required for this project.

1.8 100 YEAR STORM ESCAPE ROUTES

Please refer to the Developed Basin Map in Appendix B for 100 year storm overflow routes.

METHODOLOGY

2.1 DEPTH TO GROUNDWATER

Per the Geotechnical Report for the City of Salem's Kuebler Blvd Widening project, groundwater was measured 10 feet below the ground surface near the proposed project site. The proposed stormwater design utilizes drain rock up to 5.75 feet below ground surface, which meets the required 3 feet of separation from groundwater per COS Design Standards.

2.2 DELINEATION OF EXISTING TREES AND NATIVE VEGETATION

The existing sites are predominately paved roadway. The 27th Ave and Boone Rd widening sites have existing shrubs and grasses along roadside drainage ditches. The Boone Rd/Battle Creek Rd intersection improvement has shrubs and several mature trees bordering Boone Rd to be protected. No existing trees are removed by the proposed project.

2.3 MAXIMUM INFILTRATION AND VEGETATIVE TREATMENT

A recently constructed nearby rain garden at the southwest corner of 27th Ave and Kuebler Blvd (referred to as RG2 in the Stormwater Management Report for the Kuebler Widening project) has been observed with poor infiltration. Due to the close proximity to the poor-draining soils, it is proposed to assume zero infiltration for design.

The entire disturbed area is 68,360 square feet. The proposed stormwater design will treat an area greater than the entire disturbed area (69,990 square feet) utilizing new filtration ROW planters in 27th Ave and an existing rain garden at the southwest corner of Kuebler Blvd and 27th Ave, therefore meeting MEF for GSI.

2.4 SOIL INFORMATION

The pre-developed project site contains hydrologic soil group B and C-rated soils. However, due to the close proximity to the poor-draining soils observed at 27th Ave and Kuebler Blvd mentioned above, it is proposed to assume the existing soils have a hydrologic soil rating of D. Per the COS Design Standards the pre-developed site was covered in a combination of woods and good-grass, which corresponds to a pre-developed curve number of 79 for D-rated soils per the City of Salem Design Standards. Refer to the Soils Report in Appendix A for more details.

2.5 HAZARDOUS MATERIAL

The applicant is not aware of any hazardous material contamination onsite.

3.1 METHODS & SOFTWARE USED

HydroCAD modeling software was used to size the stormwater facilities. The Santa Barbara Unit Hydrograph Type 1A storm was used to model the required design storms. Per the City of Salem (COS) Design Standards the design storms used were the 1.38 inch, 24-hour (water quality storm), half the 2-year, 24-hour and the 10-year, 24-hour storm events.

Table 1 | City of Salem 24-hour Design Storms

	24-Hour Rainfall Depths for Salem, OR						
Recurrence Interval, Years	WQ	2	5	10	25	50	100
24-Hour Depths, Inches	1.38	2.2	2.7	3.2	3.6	4.1	4.4

Source: City of Salem Administrative Rules Chapter 109 – Division 004 Appendix D

3.2 CURVE NUMBER & TIME OF CONCENTRATION CALCULATIONS

The developed impervious areas and pervious areas were assigned curve numbers (CN) of 98 and 80 respectively. The impervious areas were assigned a CN of 98 which corresponds to parking and paved spaces. The pervious areas were assigned a CN of 80 which corresponds to the curve number for soil group D with amended soil coverage per the City of Salem Design Standards.

Time of concentration (Tc) for the pre-developed conditions at 27th Ave was calculated using sheet and shallow concentrated flow equations. See the Pre-Developed Basin Map in Appendix B for the flow path used and refer to the HydroCAD Summaries in Appendix C for calculations. A minimum time of concentration of 5 minutes is applied to the developed basins due to the minimum time-step used by the HydroCAD modeling software.

Pre-developed flows from the Boone Rd/Battle Creek site are conservatively assumed to be zero for all design storms and therefore the time of concentration for the site was not calculated.

3.3 CONVEYANCE CAPACITY CALCULATIONS

Per the COS Design Standards for collector streets, the stormwater facilities were designed to convey the developed 25-year, 24-hour storm. At the Boone Rd/Battle Creek Rd site the 25-year peak is 0.15 cfs. At the 27th Ave site the combined 25-year peaks are 1.34 cfs. Refer to Tables 2 and 4 below for peak runoff rates. The most constrained pipe in either system is a 12-inch pipe with a 0.3 percent slope. Using Manning's Equation per the COS Design Standards, a 12-inch pipe with a slope of 0.3 percent and Manning's n of 0.013 has a full flow capacity of 1.95 cfs, which exceeds the 25-year flow peaks for either site.

3.4 TREATMENT & FLOW CONTROL SIZING CALCULATIONS

Refer to the Overall Stormwater Map for an overview of treatment and detention methods for each improvement site.

Boone Rd/Battle Creek Rd

The Boone Rd/Battle Creek Rd improvement site was analyzed as a single basin for stormwater calculations. General basin characteristics of developed conditions are listed in Table 2. Pre-developed flows from the site are conservatively assumed to be zero for all design storms and therefore pre-developed conditions were not analyzed for the site. Over-detention for the site's undetained developed runoff is provided by existing facilities and calculations are discussed further below. For more detail refer to the Basin Maps in Appendix B and the Civil Drawings.

Table 2 | General Basin Characteristics – Boone Rd/Battle Creek Rd

Basin ID	Source (Roof/Road /Other)	Impervious Area (sf)	Pervious Area (sf)	Design Storms				CN	Tc
				WQ (cfs)	½ 2 Year (cfs)	10 Year (cfs)	25 Year (cfs)		
Boone & Battle	Road	7,540	-	0.05	0.04	0.13	0.15	98	5.0

Runoff from the Boone Rd/Battle Creek Rd improvements will not be treated or detained, but over-treatment and over-detention is provided by existing facilities constructed with the Kuebler Widening Project that mitigate for the un-managed runoff.

Per Table D-6 of the Stormwater Management Plan for the Kuebler Widening project dated June 2015 (Kuebler Widening SWMP) the existing stormwater facilities for the project were designed to treat 6.31 cfs and were only required to treat 2.90 cfs. Refer to the Kuebler Widening SWMP on-file at the City for details. It is proposed the 3.41 cfs of excess treatment within the existing facilities mitigates the 0.05 cfs of un-treated water quality runoff from the Boone Rd/Battle Creek Rd improvements.

Runoff from the Boone Rd/Battle Creek Rd improvement site will flow to the existing public storm drain in Battle Creek Rd and be conveyed to an existing detention facility in Kuebler Blvd between Battle Creek Rd and Stroh Ln. It is proposed to consider runoff from disturbed areas of the Boone Rd/Battle Creek Rd site to be undetained, though the flowrate will be slowed by the existing detention facility.

Per Table D-5 of the Kuebler Widening SWMP, the existing stormwater facilities over-detain the half 2-year and 10-year storms by 0.15 cfs and 0.83 cfs, respectively. It is proposed to utilize this over-detention to mitigate the undetained runoff from the Boone Rd/Battle Creek Rd improvements. Table 3 below summarizes the pre-developed and post-developed flows per the Kuebler Widening SWMP and compares the available over-detention to the undetained runoff from the Boone Rd/Battle Creek Rd site. As shown by Table 3 the over-detention provided by the Kuebler Widening project exceeds the undetained runoff from the Boone Rd/Battle Creek Rd disturbed site.

Table 3 | Existing ODOT/Basin D Detention vs. Boone Rd/Battle Creek Rd Undetained Runoff

Design storm	Kuebler Widening Project			Boone & Battle
	Pre	Post	Over-Detention	
Half 2-Year (cfs)	2.21	2.06	0.15	0.04
10-Year (cfs)	12.46	11.63	0.83	0.13

Boone Rd Widening

Stormwater runoff from the Boone Rd Widening site is not analyzed in this report as it has already been permitted through wetland permitting.

27th Ave

The 27th Ave site was divided into multiple basins for analysis of the stormwater. General basin characteristics of both pre-developed and developed conditions are listed in Table 4. For more detail refer to the Basin Maps in Appendix B and the Civil Drawings.

Table 4 | General Basin Characteristics – 27th Ave

Basin ID	Source (Roof/Road /Other)	Impervious Area (sf)	Pervious Area (sf)	Design Storms				CN	Tc
				WQ (cfs)	½ 2 Year (cfs)	10 Year (cfs)	25 Year (cfs)		
PD[1]	Native	-	44,380	-	0.04	0.22	-	79	23.6
Pass-Thru[2]	Road	11,760	-	-	0.06	0.20	-	98	5.0
Developed – To New Stormwater Facilities									
1	Road/ Landscape	17,460	1,820	0.12	0.09	0.31	0.35	98/80[3]	5.0
2	Road/ Landscape	9,010	470	0.06	0.05	0.16	0.18	98/80	5.0
3	Road/ Landscape	7,010	2,360	0.05	0.04	0.14	0.16	98/80	5.0
4	Road/ Landscape	4,810	400	0.03	0.03	0.09	0.10	98/80	5.0
5	Road/ Landscape	11,580	1,220	0.08	0.06	0.21	0.23	98/80	5.0
Developed – To Existing Stormwater Facilities									
6	Road/ Landscape	13,850	-	0.10	0.07	0.24	0.27	98	5.0
7	Road	11,870	-	0.08	0.06	0.20	0.23	98	5.0

[1] PD = pre-developed site conditions (i.e., pre-developed release rates) for net area of basins 1-5, excluding the pass-thru areas.
[2] Pass-Thru drainage includes runoff from the grind and inlay area of 27th Ave within Basins 1 and 2 and the offsite private driveway for the future shopping development.
[3] The first curve number listed is for the impervious area in the basin (98), then for the pervious area (80)

The Pre-Developed Basin includes area from Developed Basins 1-5, excluding existing areas of 27th Ave planned for grind and inlay and the offsite private driveway to the future shopping development which do not require stormwater management. See the Pre-Developed Basin Map in Appendix B for the Pre-Developed Basin boundaries. Regions of Basins 6 and 7 also include existing areas of 27th Ave planned for grind and inlay. See the Developed Basin Map in Appendix B and the Civil Drawings for grind and inlay limits.

New combination filtration ROW planters are proposed to treat and detain the required storm events for Basins 1, 2, 4, and 5 which is a majority of the site's disturbed area. Basin 3 runoff drains to a treatment-only filtration planter but will not be detained. Over-detention in the combination filtration planters mitigates for the undetained runoff from Basin 3. Basins 6 and 7 are treated and detained by existing facilities.

The planters have been sized to drain the water quality storm event in less than the required 54 hours from the start of the event. Refer to the HydroCAD analysis in Appendix C for drain times. Table 5 below summarizes facility sizing. The number of the Basin ID corresponds to the stormwater Facility ID. Combination planters are designed 4-feet wide with 12 inches from the top of the growing media to the curb break. The treatment-only planter (GSI-3) is designed with 4 inches from the top of the growing media to the curb break. Planter lengths and drain rock areas/depths vary as summarized in Table 5. Please note that all combination planters require drain rock as specified in Table 5 to detain and control the design storms in conformance with COS standards. See the Civil Drawings for more details on planter design.

Table 5 | Facility Sizing Summary – 27th Ave

Facility ID[1]	Facility Length (ft)	Required Drain Rock Surface Area (sf)	Depth of Drain Rock (ft)
GSI-1	190[2]	570	3.0
GSI-2	90	270	3.0
GSI-3[3]	60	150	1.0
GSI-4	30	90	3.0
GSI-5	75	225	3.0

[1] All facilities are publicly owned and maintained filtration ROW planters.
[2] GSI-1 consists of a 100-ft and 90-ft planter linked together.
[3] GSI-3 is a treatment-only planter.

Runoff from the disturbed areas of Basin 6 and 7 are treated by existing facilities as described later in this Section.

Stormwater is released from the combination planters by a Beehive flow-control catch basin with two orifices. Overflow is conveyed by the rim of the Beehive catch basin. A summary of the flow control design is provided in Table 6.

Table 6 | Summary of Flow Control Design – 27th Ave

Outlet ID/ Storm Event	Orifice Size (in)	Orifice Elevation (ft)	Release Rate (cfs)	Peak WSE[1] (ft)	Top Planter Elevation (ft)
GSI-1					
½ 2 Year	0.7	345.40	0.02	347.06	351.15
10 Year	0.8	346.90	0.15	351.07	351.15
25 Year Overflow	24[2]	351.05	0.29	351.10	351.15
GSI-2					
½ 2 Year	0.7	345.70	0.01	346.97	351.45
10 Year	0.5	347.20	0.04	351.34	351.45
25 Year Overflow	24	351.35	0.11	351.37	351.45
GSI-4					
½ 2 Year	0.5	344.25	0.01	345.86	349.60
10 Year	0.7	345.75	0.09	349.51	349.60
25 Year Overflow	24	349.50	0.10	349.51	349.60
GSI-5					
½ 2 Year	0.6	344.02	0.03	345.88	349.77
10 Year	1.1	345.52	0.14	349.68	349.77
25 Year Overflow	24	349.67	0.22	349.70	349.77

[1] WSE = water surface elevation
[2] Overflow provided by a 24-inch diameter Beehive catch basin.

The allowable release from Basins 1-5 is a combination of the runoff peaks from the pre-developed (PD) basin and the pass-thru flows from the future private driveway and the existing 27th Ave grind and inlay areas within Basins 1 and 2. The allowable and design release rates for the design storms are compared in Table 7.

Table 7 | Allowable vs. Design Release Rates – 27th Ave

Site Condition	Design Storm (cfs)	
	½ 2 Year	10 Year
Pre-Developed/Existing		
PD	0.04	0.22
Pass-Thru[1]	0.07	0.20
Total Allowed Release[2]	0.10	0.41
Developed		
GSI 1	0.02	0.15
GSI 2	0.01	0.04
GSI 3	0.04	0.14
GSI 4	0.01	0.09
GSI 5	0.03	0.14
Total Developed Release[1]	0.10	0.41

[1] Pass-Thru drainage includes runoff from the grind and inlay area of 27th Ave within Basins 1 and 2 and the offsite private driveway for the future shopping development.
[2] Totals do not sum to the addition of the individual flows. This is due to the fact that the time of concentrations per basin varies. The totals are the combination of the basin hydrographs. Refer to Links: L1-Allowed Release and L2-Developed Release in Appendix C.

Runoff from Basins 6 and 7 will be treated and detained by existing facilities constructed for the Kuebler Widening project.

Basin 6 runoff is treated and detained by an existing rain garden at the southwest corner of 27th Ave and Kuebler Blvd referred to as RG 2 in the Kuebler Widening SWMP. The rain garden was designed to treat and detain 30,600 square feet of future impervious runoff from 27th Ave per the Kuebler Widening SWMP. The proposed design drains 13,850 square feet of 27th Ave runoff to RG 2. Therefore, Basin 6 developed runoff is already accounted for. Refer to pages 160 through 172 of the Kuebler Widening SWMP for original design calculations of RG 2 (within Appendix III: HydroCAD Summary).

Basin 7 runoff drains east of the project site to an existing underground detention pipe and media treatment vault constructed with the Kuebler Widening project. Refer to the Kuebler Widening SWMP for design details. For simplicity, runoff from Basin 7 is assumed to be undetained, though runoff will be slowed by the existing facilities.

As mentioned previously, per Table D-6 of the Kuebler Widening SWMP the existing stormwater facilities for the project were designed to treat 6.31 and were only required to treat 2.90 cfs. It is proposed the 3.41 cfs of excess treatment within the stormwater facilities mitigates for the 0.08 cfs of water quality storm runoff from Basin 7 and the 0.05 cfs of un-treated water quality runoff from the Boone Rd/Battle Creek Rd improvements mentioned earlier in this report.

Per Table D-5 of the Kuebler Widening SWMP, the existing stormwater facilities over-detain the half 2-year and 10-year storms by 0.15 cfs and 0.83 cfs, respectively. It is proposed to utilize this over-detention to mitigate the undetained runoff from both Basin 7 and the Boone Rd/Battle Creek Rd improvements. Table 8 below summarizes the pre-developed and post-developed flows per the Kuebler Widening SWMP and compares the available over-detention to the undetained runoff from the proposed improvement sites. As shown by Table 8 the over-detention provided by the Kuebler Widening project exceeds the undetained runoff from the improvement sites.

Table 8 | Existing ODOT/Basin D Detention vs. Undetained Runoff from Proposed Improvements

Design storm	Kuebler Widening Project			Boone & Battle	27th Ave Basin 7
	Pre	Post	Over-Detention		
Half 2-Year (cfs)	2.21	2.06	0.15	0.04	0.06
10-Year (cfs)	12.46	11.63	0.83	0.13	0.20

3.5 SUMMARY

The proposed and existing stormwater system has been designed to control and release half the 2-year, 24-hour and the 10-year, 24-hour storm events at rates less than their respective pre-developed storms. The proposed design also treats the water quality storm per COS Design Standards. Therefore, the project meets the flow control and treatment requirements as set forth in Administrative Rule 109 Division 004 - Stormwater System.

APPENDIX A
NRCS SOIL REPORT

Map Scale: 1:3,260 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 15, Sep 18, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 15, 2015—Jun 23, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
NeB	Nekia silty clay loam, 2 to 7 percent slopes	C	3.7	44.0%
NkC	Nekia stony silty clay loam, 2 to 12 percent slopes	C	0.6	6.9%
SlB	Salkum silty clay loam, basin, 0 to 6 percent slopes	B	4.1	49.1%
Totals for Area of Interest			**8.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Map Scale: 1:3,260 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 15, Sep 18, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 15, 2015—Jun 23, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

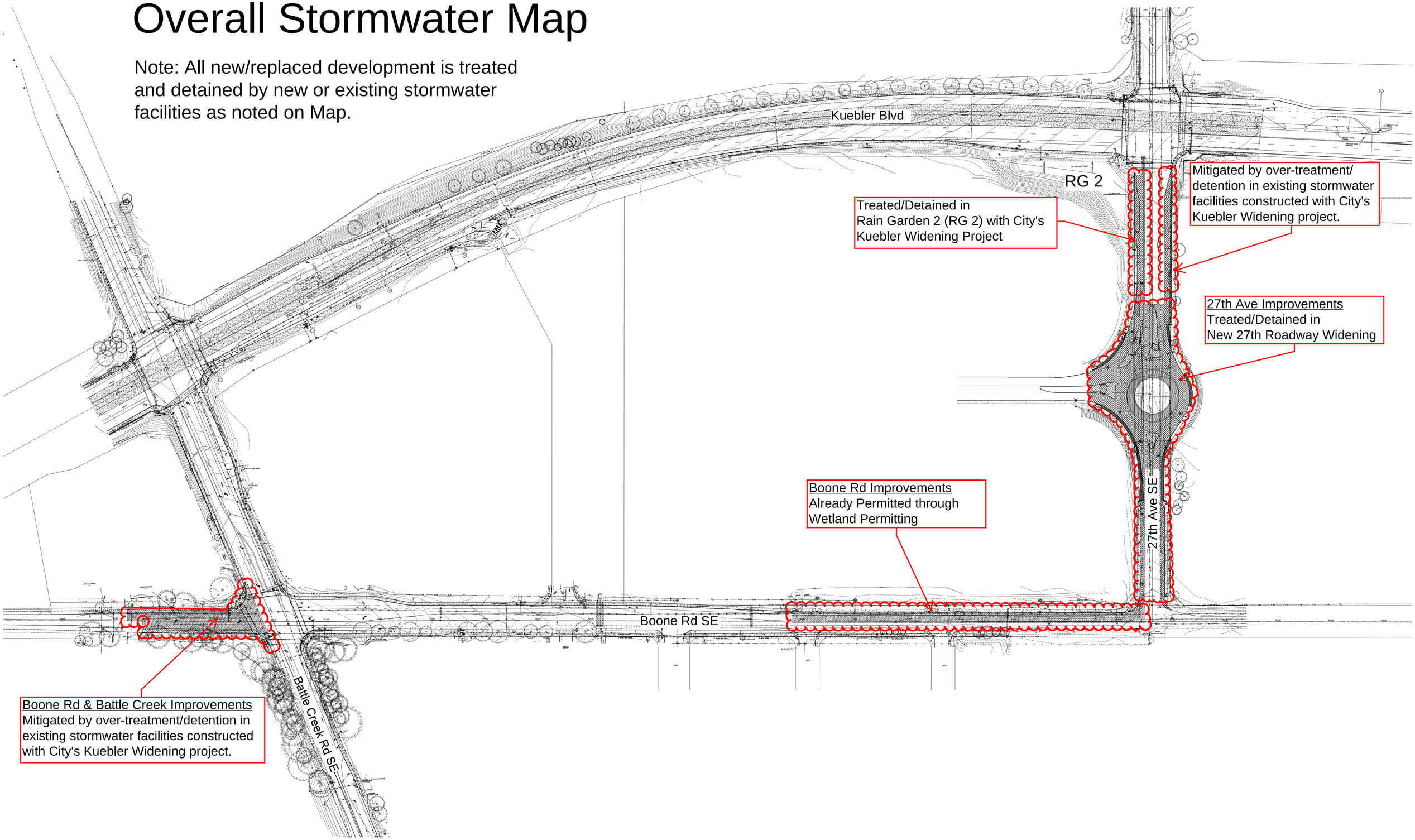
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NeB	Nekia silty clay loam, 2 to 7 percent slopes	3.7	44.0%
NkC	Nekia stony silty clay loam, 2 to 12 percent slopes	0.6	6.9%
SlB	Salkum silty clay loam, basin, 0 to 6 percent slopes	4.1	49.1%
Totals for Area of Interest		**8.3**	**100.0%**

APPENDIX B

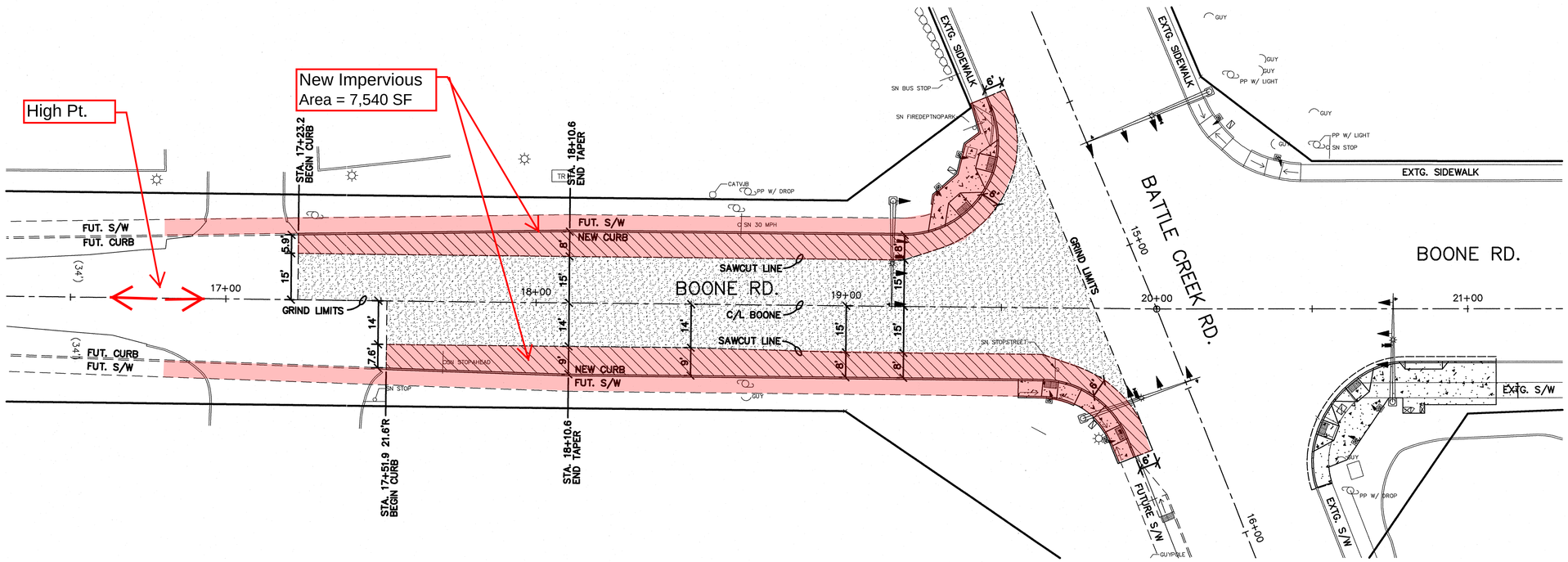
OVERALL STORMWATER MAP AND BASIN MAPS

Overall Stormwater Map

Note: All new/replaced development is treated and detained by new or existing stormwater facilities as noted on Map.



Boone Rd & Battle Creek Rd
Basin Map



0 10 20 40
(feet)

GENERAL NOTES:

1. SEE TYPICAL SECTIONS, SHEET ST–18 FOR PAVEMENT DESIGN SECTIONS.
2. SEE SHEETS SST–1 TO SST–7 FOR SIGNING & STRIPING PLANS.

SURFACING LEGEND

NEW PAVEMENT SECTION (BOONE RD)
2" LEVEL 3, 1/2–INCH DENSE HMAC WEARING COURSE OVER
3" LEVEL 3, 3/4–INCH DENSE HMAC BASE COURSE OVER
10" OF 1"–0 CRUSHED ROCK

NEW PAVEMENT SECTION (27TH AVE.)
3" LEVEL 3, 3/4–INCH DENSE GRADED PMAC OVER
5" LEVEL 3, 3/4–INCH DENSE GRADED PMAC BASE COURSE
(2 EQUAL LIFTS) OVER 10" OF 1"–0 CRUSHED AGG. BASE

GRIND & INLAY
GRIND 3" OF EXISTING ASPHALT
REPLACE WITH 3" OF LEVEL 3, 1/2–INCH DENSE GRADED PMAC

PCC PEDESTRIAN CONCRETE
4" PCC OVER 2" CR. ROCK BASE
OVER COMPACTED SUBGRADE

NO.	DATE	DESCRIPTION	BY
1	7–25–18	PER CITY COMMENTS	TN

REVISIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

DSN. UW
DRN. TN
CKD. UW
DATE. JAN. 2018

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 15, 1982
WILLIAM T. WELLS
76947PE
RENEWS: 6/30/2020

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585–2474 Fax: (503) 585–3986
E–mail: westech@westech–eng.com

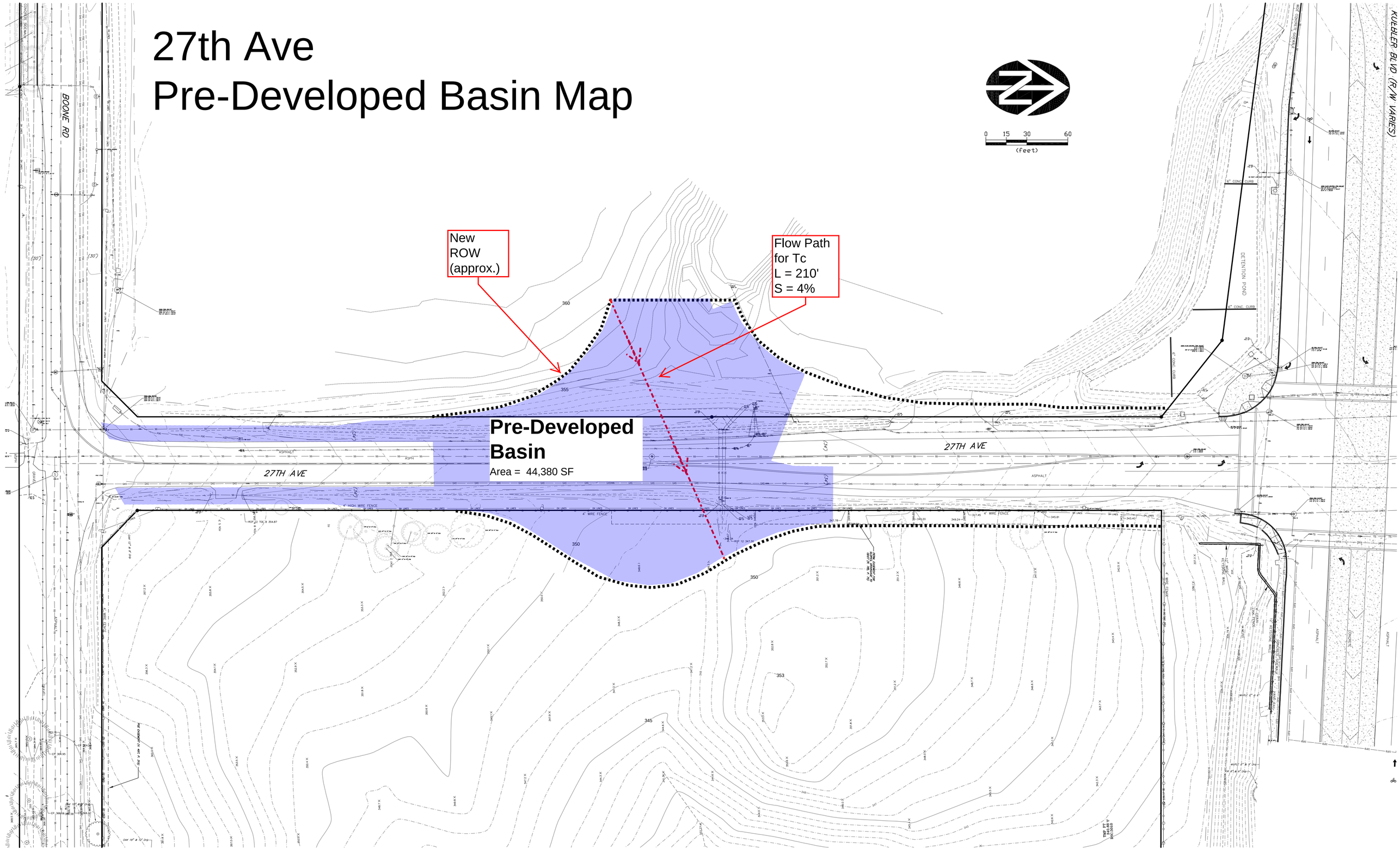
PACTRUST KUEBLER DEVELOPMENT
PHASE 2 OFFSITE BUILDOUT

BOONE ROAD
SURFACING PLAN

DRAWING
SU–1

JOB NUMBER
2672.8000.0

27th Ave
Pre-Developed Basin Map



27th Ave
Developved Basin Map

Offsite Runoff
Approx. Limits* (-----)
Area = 2,140 SF
*See Kuebler Gateway Shopping Center drawings for details.

Offsite Runoff
Approx. Limits* ( )
Area = 1,940 SF
*See Kuebler Gateway Shopping Center drawings for details.

GSI-5

Existing
Rain Garden
(RG 2)

Flow-Control Structure

Existing 27th Ave
Grind & Inlay Limits (-----)
Area = 3,160 SF

GSI-1

Existing 27th Ave
Grind & Inlay Limits (-----)
Area = 7,680 SF

Basin 1
Pervious = 1,820 SF
Impervious = 17,460 SF

Basin 5
Pervious = 1,220 SF
Impervious = 11,580 SF

Basin 6
Pervious = 0 SF
Impervious = 13,850 SF

Basin 2
Pervious = 470 SF
Impervious = 9,010 SF

Basin 3
Pervious = 2,360 SF
Impervious = 7,010 SF

Basin 4
Pervious = 400 SF
Impervious = 4,810 SF

Basin 7
Pervious = 0 SF
Impervious = 11,870 SF

27TH AVE.

GSI-2

Flow-Control Structure

GSI-3

Flow-Control Structure

GSI-4

Existing 27th Ave
Grind & Inlay Limits (-----)
Area = 6,120 SF

Note: See Civil Drawings for GSI Design Details

= emergency overflow route

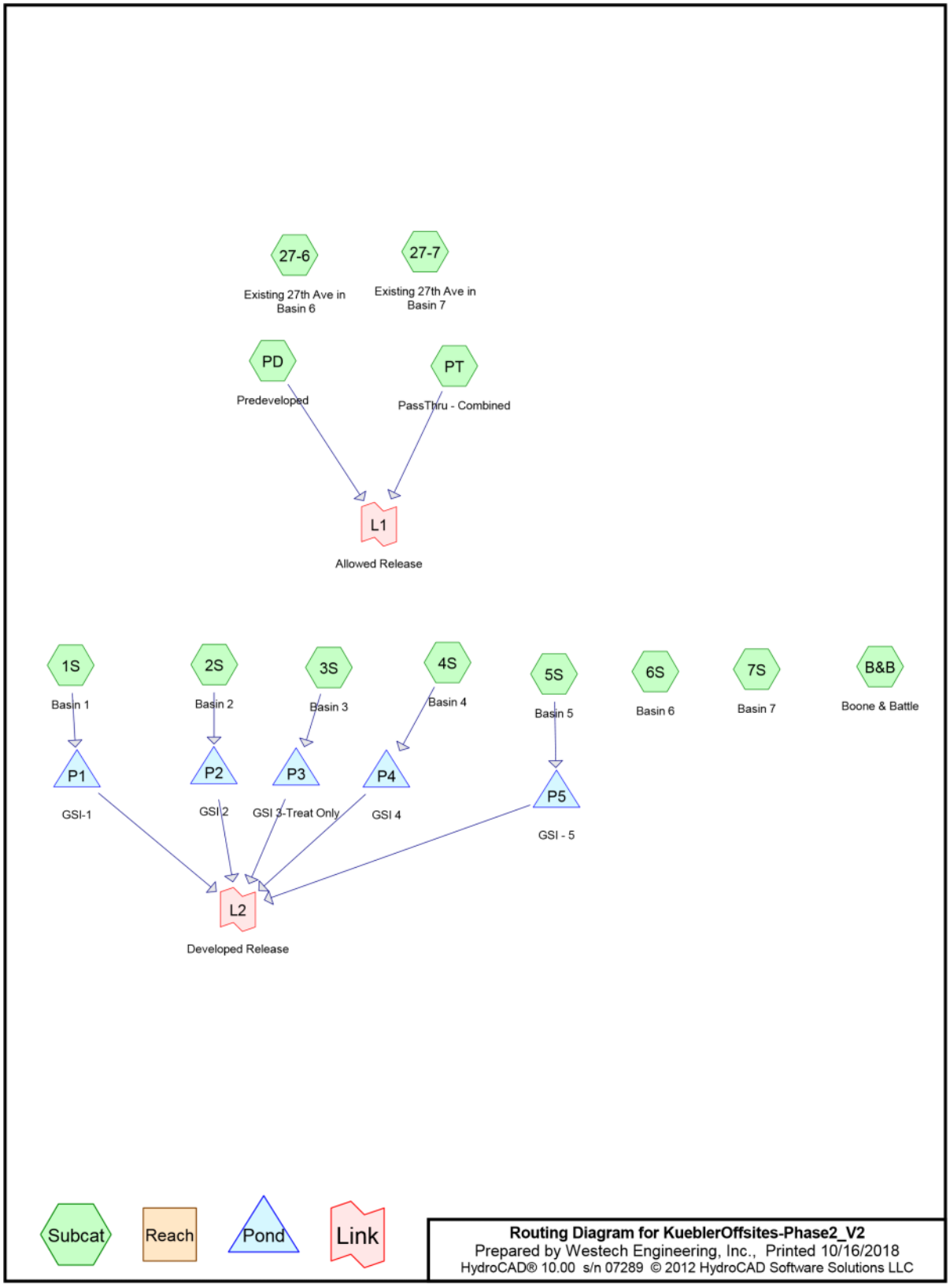
Existing
Media Filtration Vault &
Detention Facilities
(located east of project site, off the page)

KUEBLER BLVD.

BOONE RD.

APPENDIX C

HYDROCAD SUMMARIES


27-6
Existing 27th Ave in Basin 6
27-7
Existing 27th Ave in Basin 7
PD
Predeveloped
PT
PassThru - Combined
L1
Allowed Release
1S
Basin 1
2S
Basin 2
3S
Basin 3
4S
Basin 4
5S
Basin 5
6S
Basin 6
7S
Basin 7
B&B
Boone & Battle
P1
GSI-1
P2
GSI 2
P3
GSI 3-Treat Only
P4
GSI 4
P5
GSI - 5
L2
Developed Release
Subcat
Reach
Pond
Link
Routing Diagram for KueblerOffsites-Phase2_V2
Prepared by Westech Engineering, Inc., Printed 10/16/2018
HydroCAD® 10.00 s/n 07289 © 2012 HydroCAD Software Solutions LLC

Summary for Subcatchment 27-6: Existing 27th Ave in Basin 6

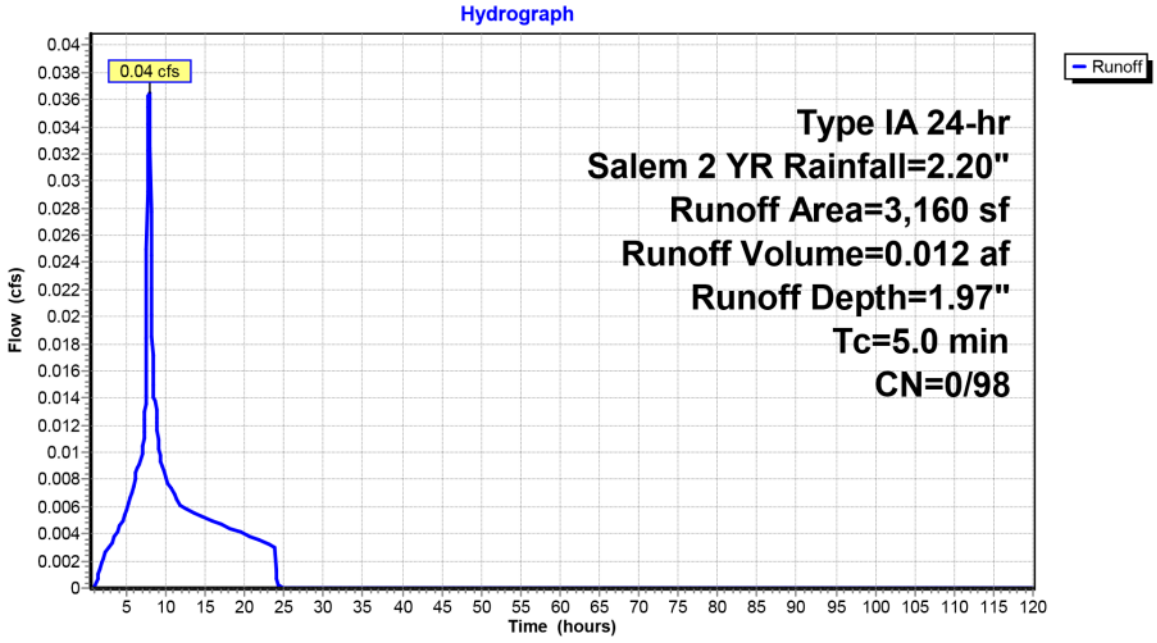
Runoff = 0.04 cfs @ 7.90 hrs, Volume= 0.012 af, Depth= 1.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 2 YR Rainfall=2.20"

	Area (sf)	CN	Description
*	3,160	98	Paved parking, HSG D
	3,160	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 27-6: Existing 27th Ave in Basin 6



Summary for Subcatchment 27-7: Existing 27th Ave in Basin 7

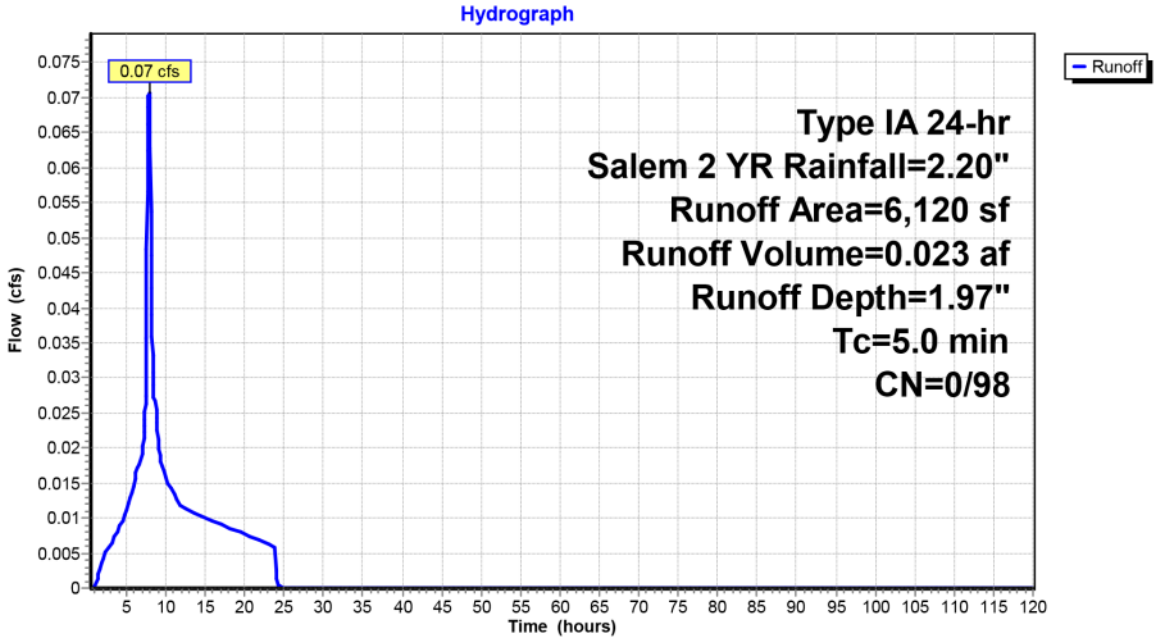
Runoff = 0.07 cfs @ 7.90 hrs, Volume= 0.023 af, Depth= 1.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 2 YR Rainfall=2.20"

	Area (sf)	CN	Description
*	6,120	98	Paved parking, HSG D
	6,120	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 27-7: Existing 27th Ave in Basin 7



Summary for Subcatchment PD: Predeveloped

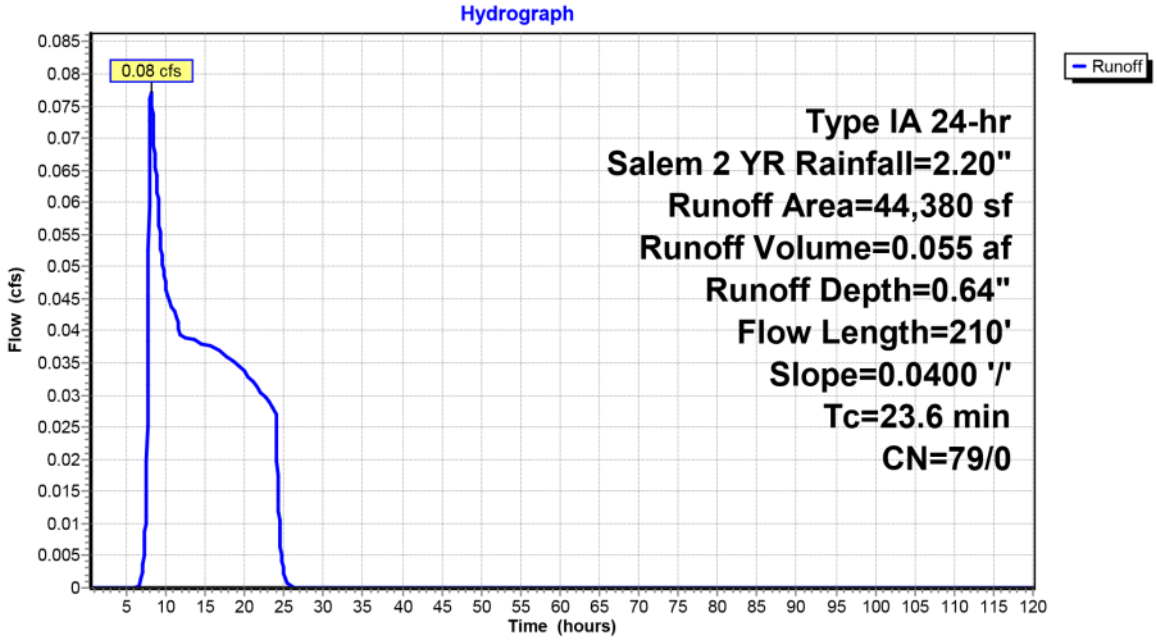
Runoff = 0.08 cfs @ 8.14 hrs, Volume= 0.055 af, Depth= 0.64"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 2 YR Rainfall=2.20"

	Area (sf)	CN	Description
*	44,380	79	Woods/grass comb., Good, HSG D
	44,380	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6	210	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.20"

Subcatchment PD: Predeveloped



Summary for Subcatchment PT: PassThru - Combined

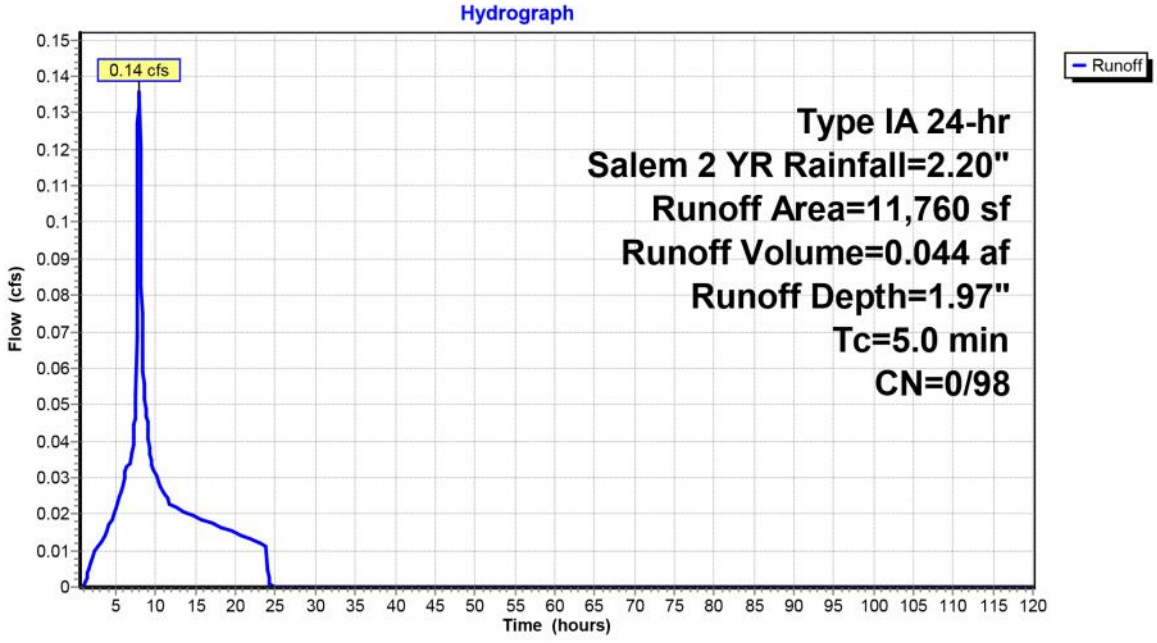
Runoff = 0.14 cfs @ 7.90 hrs, Volume= 0.044 af, Depth= 1.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 2 YR Rainfall=2.20"

	Area (sf)	CN	Description
*	7,680	98	Exist. 27th Ave in Basins 1 & 2
*	1,940	98	Driveway to Basin 1
*	2,140	98	Driveway to Basin 5
	11,760	98	Weighted Average
	11,760	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PT: PassThru - Combined

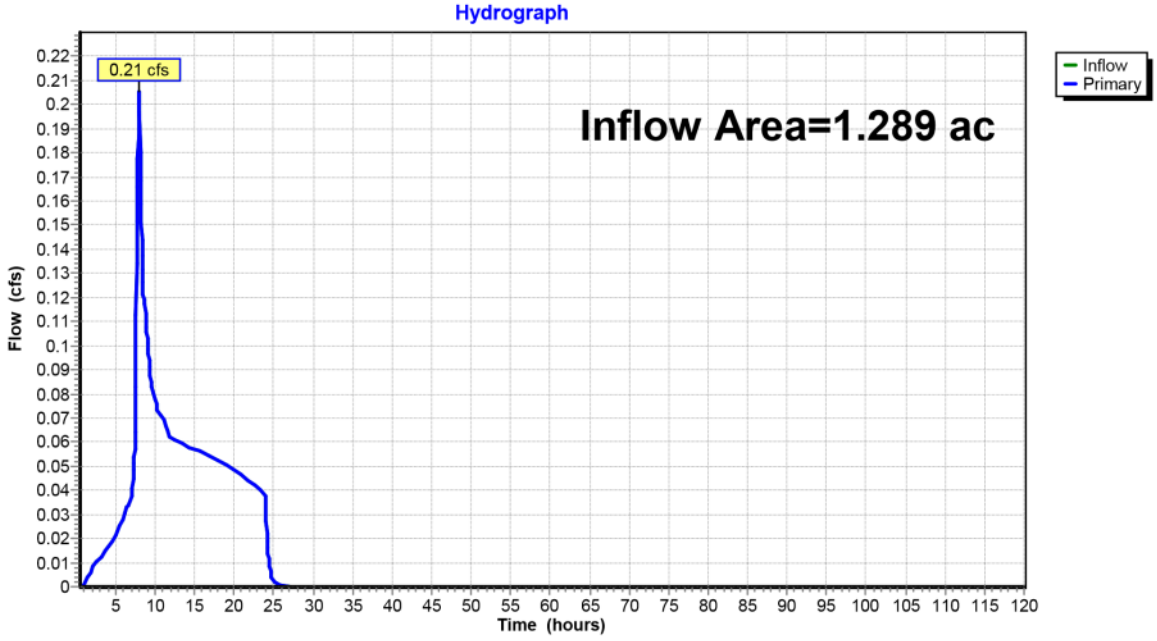


Summary for Link L1: Allowed Release

Inflow Area = 1.289 ac, 20.95% Impervious, Inflow Depth = 0.92" for Salem 2 YR event
Inflow = 0.21 cfs @ 7.99 hrs, Volume= 0.099 af
Primary = 0.21 cfs @ 7.99 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

Link L1: Allowed Release



Summary for Subcatchment 27-6: Existing 27th Ave in Basin 6

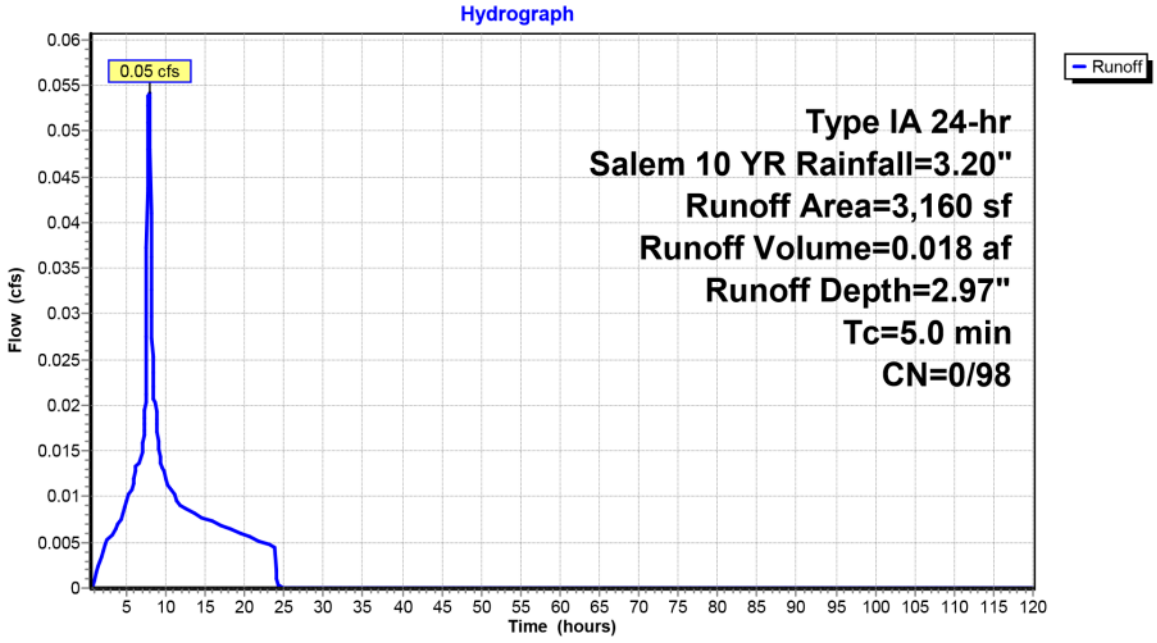
Runoff = 0.05 cfs @ 7.90 hrs, Volume= 0.018 af, Depth= 2.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	3,160	98	Paved parking, HSG D
	3,160	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 27-6: Existing 27th Ave in Basin 6



Summary for Subcatchment 27-7: Existing 27th Ave in Basin 7

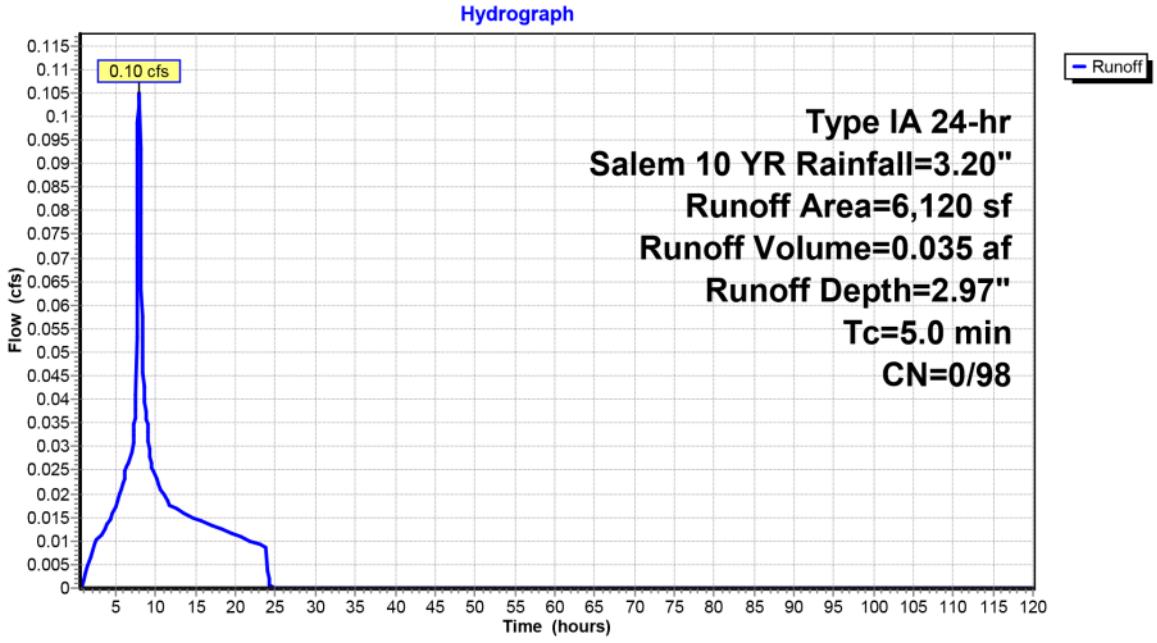
Runoff = 0.10 cfs @ 7.90 hrs, Volume= 0.035 af, Depth= 2.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	6,120	98	Paved parking, HSG D
	6,120	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 27-7: Existing 27th Ave in Basin 7



Summary for Subcatchment PD: Predeveloped

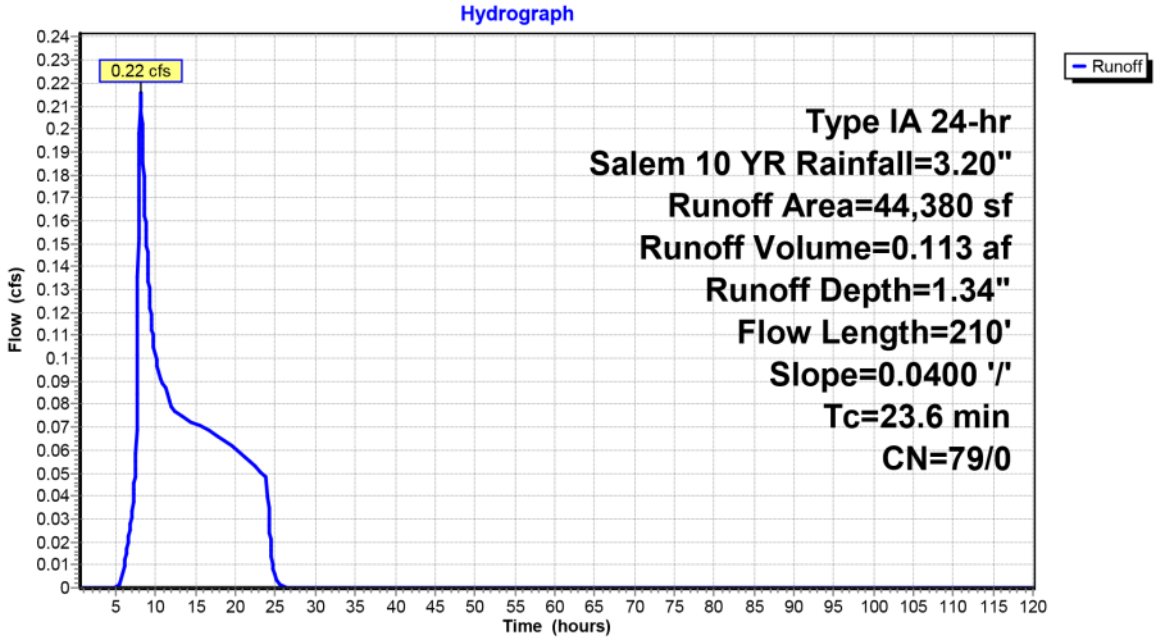
Runoff = 0.22 cfs @ 8.06 hrs, Volume= 0.113 af, Depth= 1.34"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	44,380	79	Woods/grass comb., Good, HSG D
	44,380	79	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6	210	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.20"

Subcatchment PD: Predeveloped



Summary for Subcatchment PT: PassThru - Combined

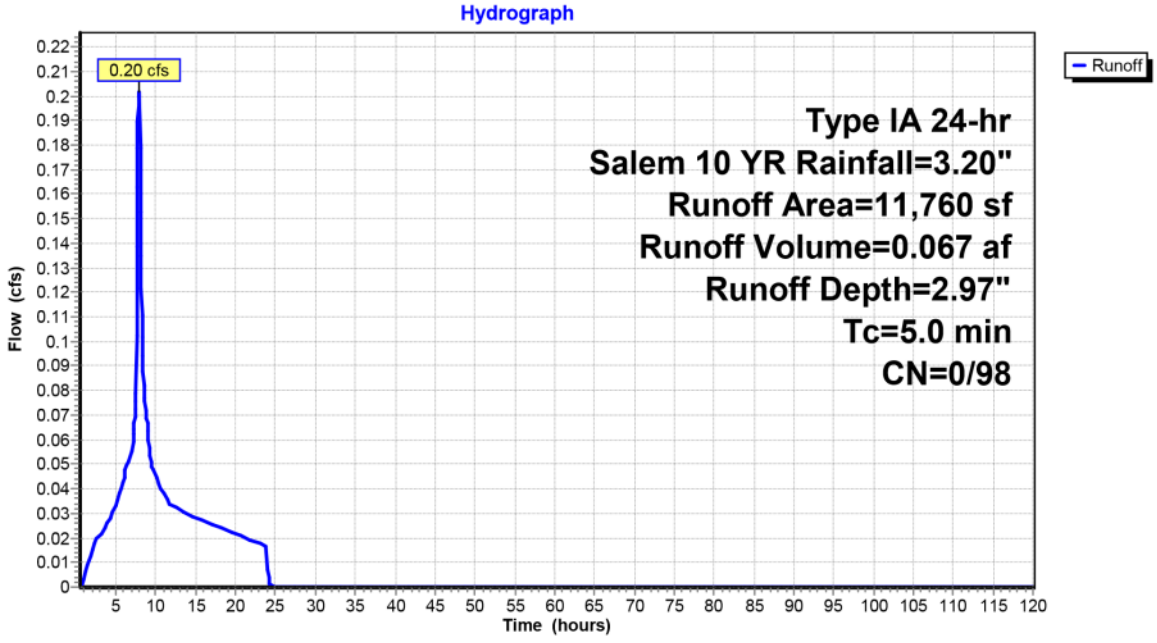
Runoff = 0.20 cfs @ 7.90 hrs, Volume= 0.067 af, Depth= 2.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	7,680	98	Exist. 27th Ave in Basins 1 & 2
*	1,940	98	Driveway to Basin 1
*	2,140	98	Driveway to Basin 5
	11,760	98	Weighted Average
	11,760	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PT: PassThru - Combined

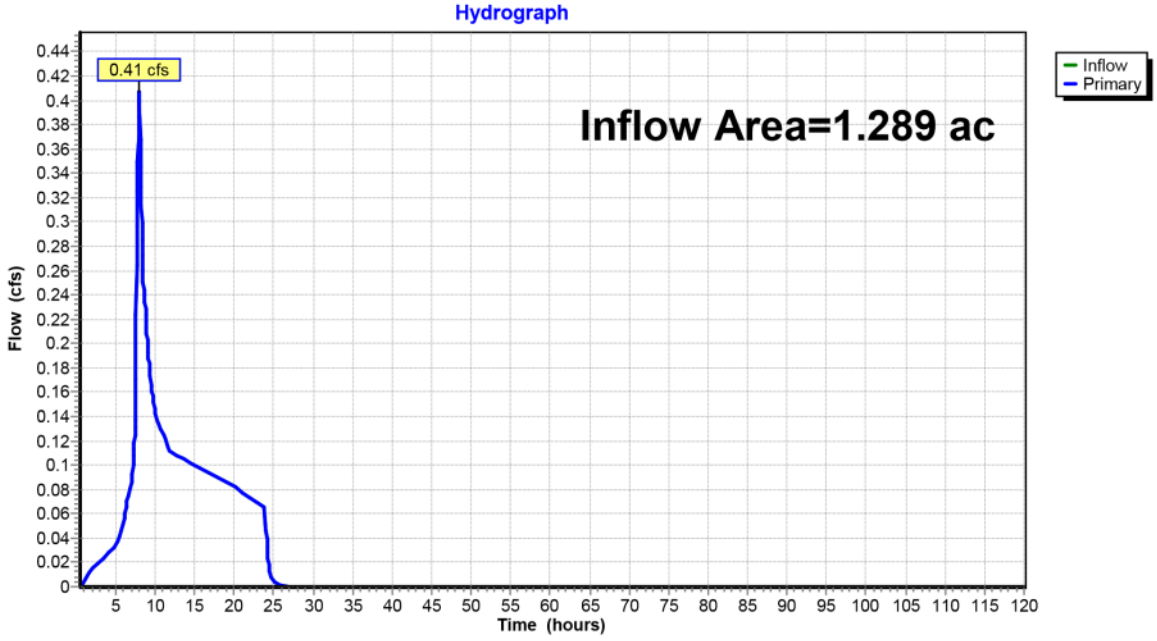


Summary for Link L1: Allowed Release

Inflow Area = 1.289 ac, 20.95% Impervious, Inflow Depth = 1.68" for Salem 10 YR event
Inflow = 0.41 cfs @ 7.99 hrs, Volume= 0.180 af
Primary = 0.41 cfs @ 7.99 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

Link L1: Allowed Release



Summary for Subcatchment 1S: Basin 1

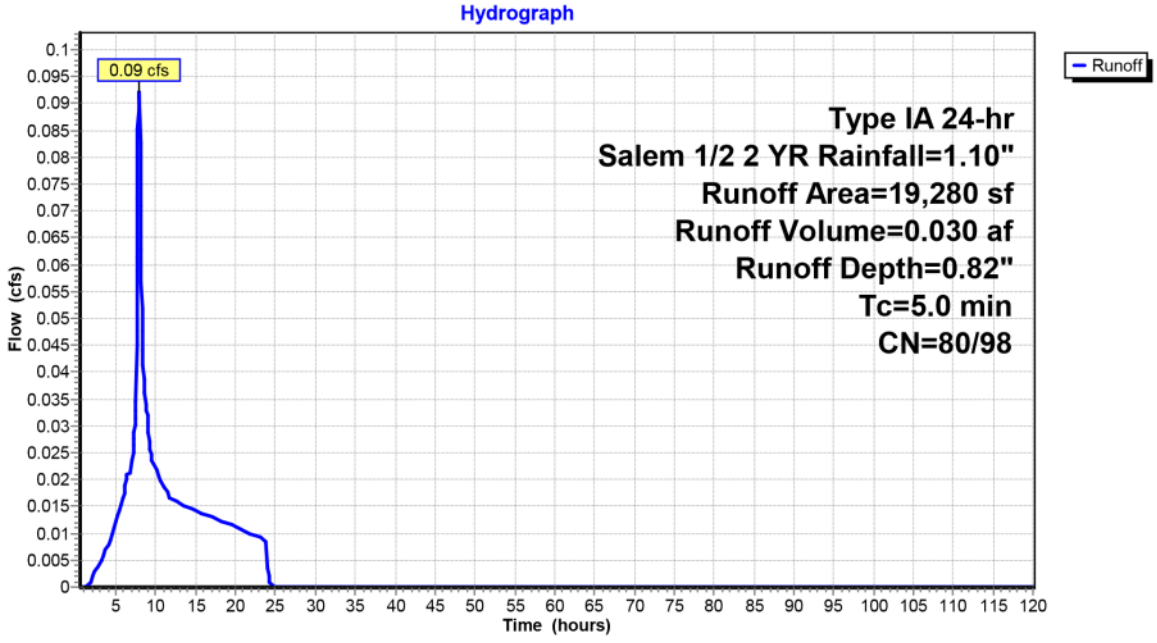
Runoff = 0.09 cfs @ 7.92 hrs, Volume= 0.030 af, Depth= 0.82"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

	Area (sf)	CN	Description
*	1,820	80	>75% Grass cover, Good, HSG D
*	17,460	98	Paved parking, HSG D
	19,280	96	Weighted Average
	1,820	80	9.44% Pervious Area
	17,460	98	90.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: Basin 1



Summary for Subcatchment 2S: Basin 2

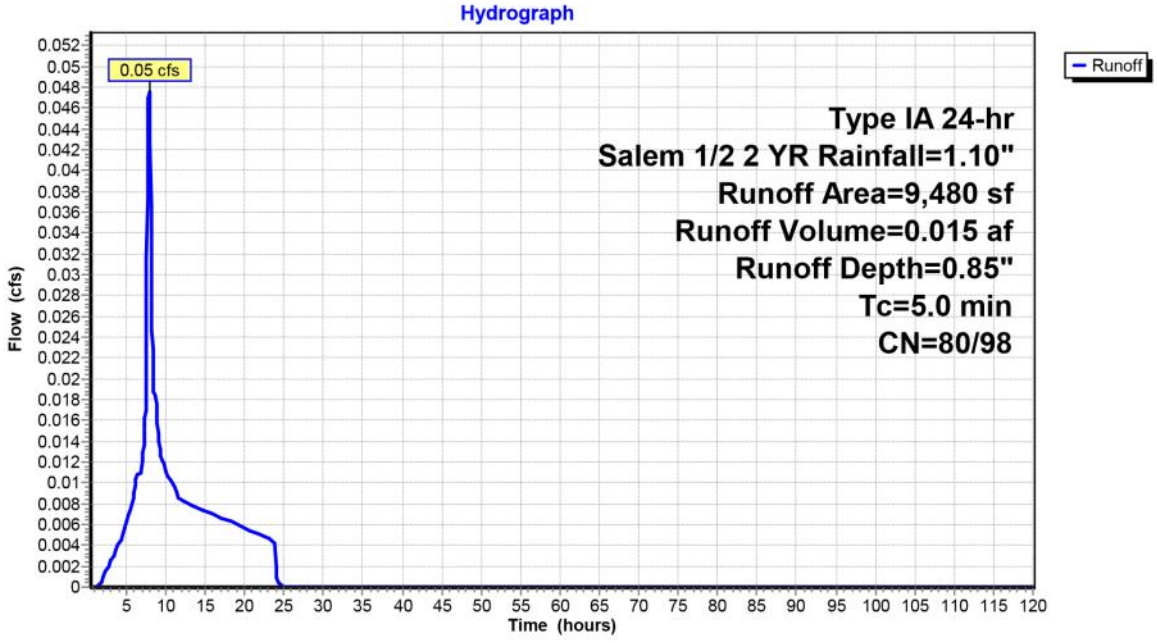
Runoff = 0.05 cfs @ 7.92 hrs, Volume= 0.015 af, Depth= 0.85"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

	Area (sf)	CN	Description
*	470	80	>75% Grass cover, Good, HSG D
*	9,010	98	Paved parking, HSG D
	9,480	97	Weighted Average
	470	80	4.96% Pervious Area
	9,010	98	95.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Basin 2



Summary for Subcatchment 3S: Basin 3

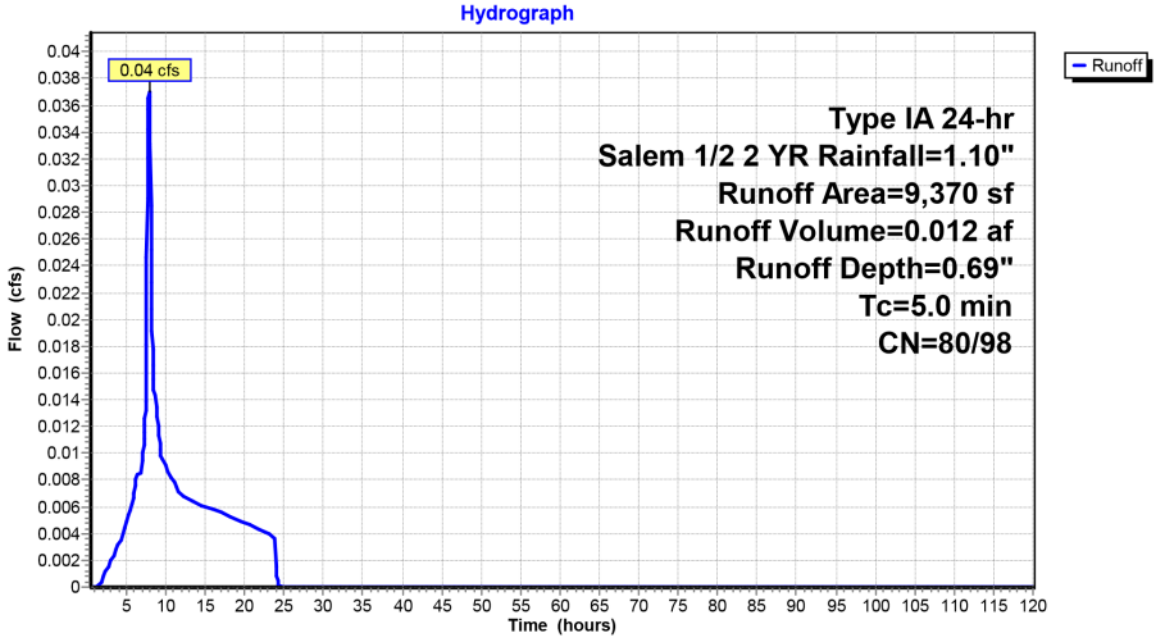
Runoff = 0.04 cfs @ 7.92 hrs, Volume= 0.012 af, Depth= 0.69"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

	Area (sf)	CN	Description
	2,360	80	>75% Grass cover, Good, HSG D
*	7,010	98	Paved parking, HSG D
	9,370	93	Weighted Average
	2,360	80	25.19% Pervious Area
	7,010	98	74.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Basin 3



Summary for Subcatchment 4S: Basin 4

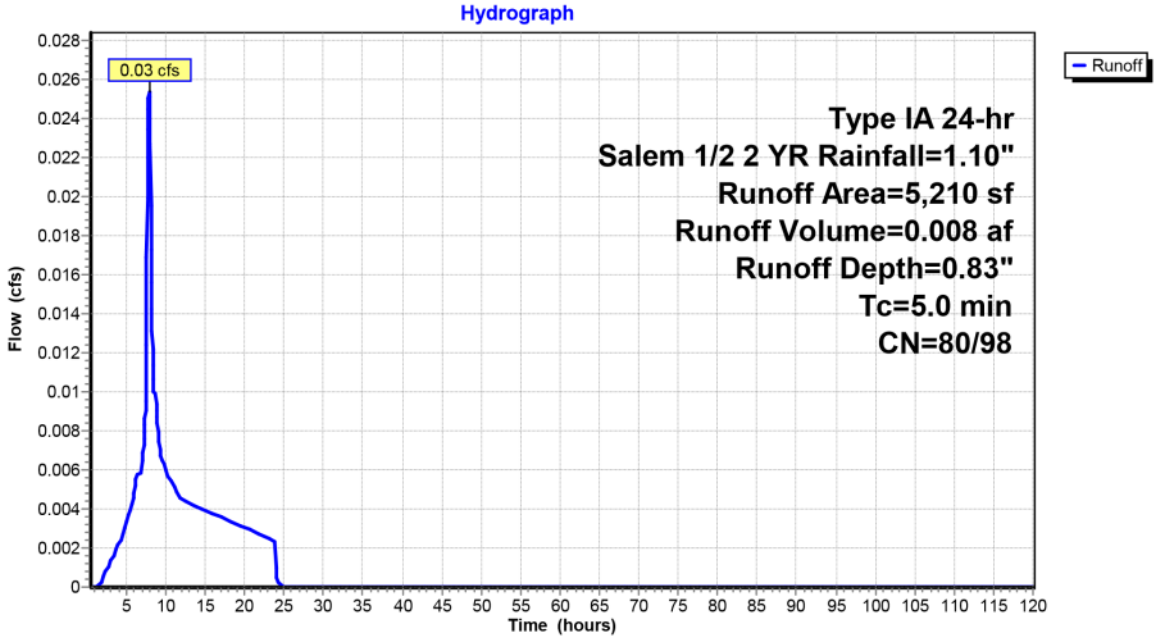
Runoff = 0.03 cfs @ 7.92 hrs, Volume= 0.008 af, Depth= 0.83"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

	Area (sf)	CN	Description
*	400	80	>75% Grass cover, Good, HSG D
*	4,810	98	Paved parking, HSG D
	5,210	97	Weighted Average
	400	80	7.68% Pervious Area
	4,810	98	92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Basin 4



Summary for Subcatchment 5S: Basin 5

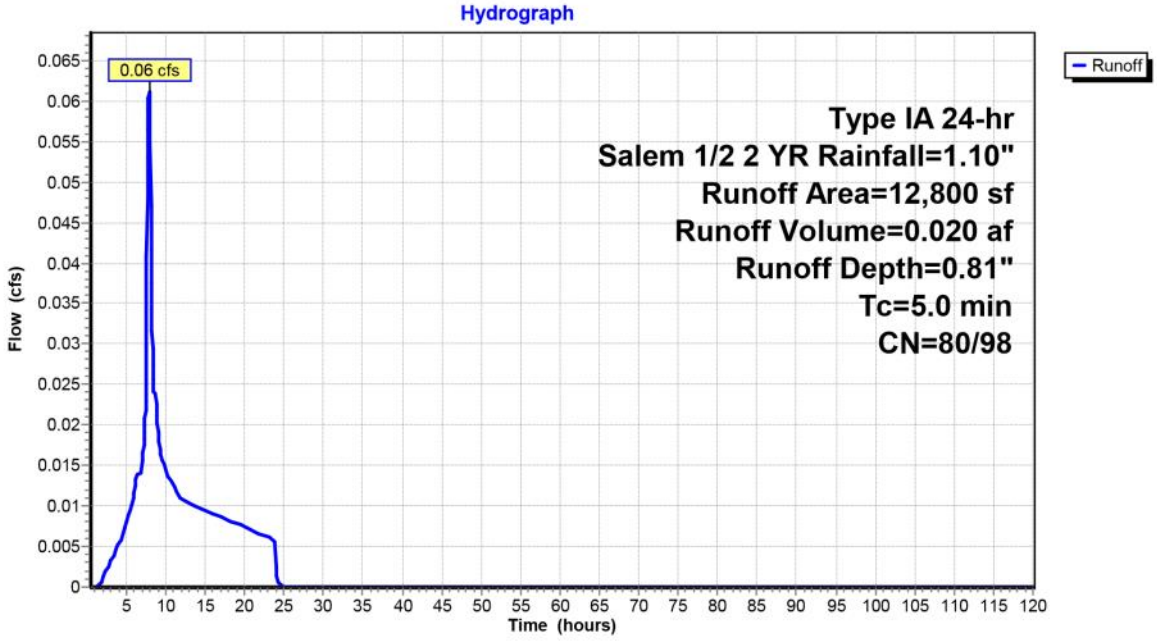
Runoff = 0.06 cfs @ 7.92 hrs, Volume= 0.020 af, Depth= 0.81"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

	Area (sf)	CN	Description
*	1,220	80	>75% Grass cover, Good, HSG D
*	11,580	98	Paved parking, HSG D
	12,800	96	Weighted Average
	1,220	80	9.53% Pervious Area
	11,580	98	90.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Basin 5



Summary for Subcatchment 6S: Basin 6

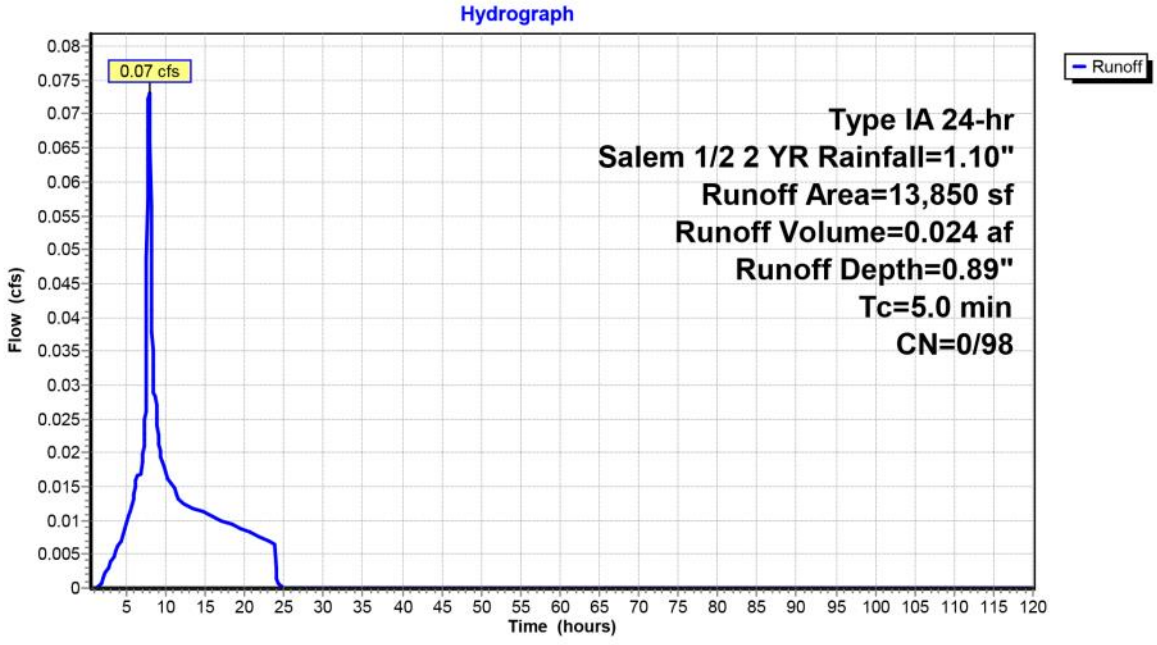
Runoff = 0.07 cfs @ 7.92 hrs, Volume= 0.024 af, Depth= 0.89"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

	Area (sf)	CN	Description
*	13,850	98	Paved parking, HSG D
	13,850	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Basin 6



Summary for Subcatchment 7S: Basin 7

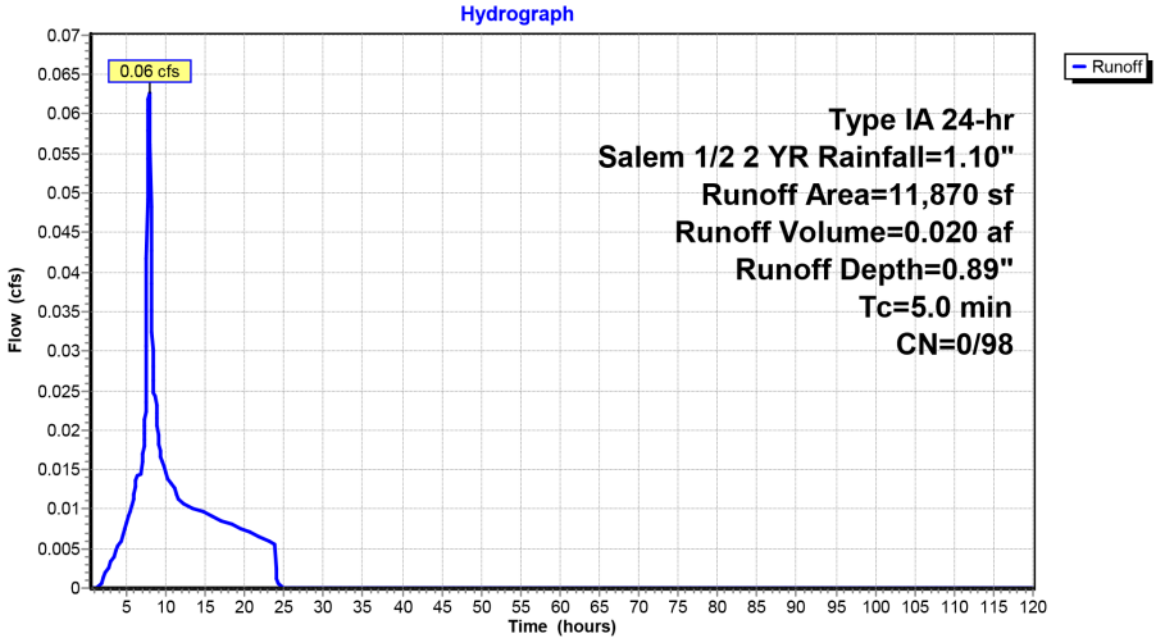
Runoff = 0.06 cfs @ 7.92 hrs, Volume= 0.020 af, Depth= 0.89"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

	Area (sf)	CN	Description
*	11,870	98	Paved parking, HSG D
	11,870	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Basin 7



Summary for Subcatchment B&B: Boone & Battle

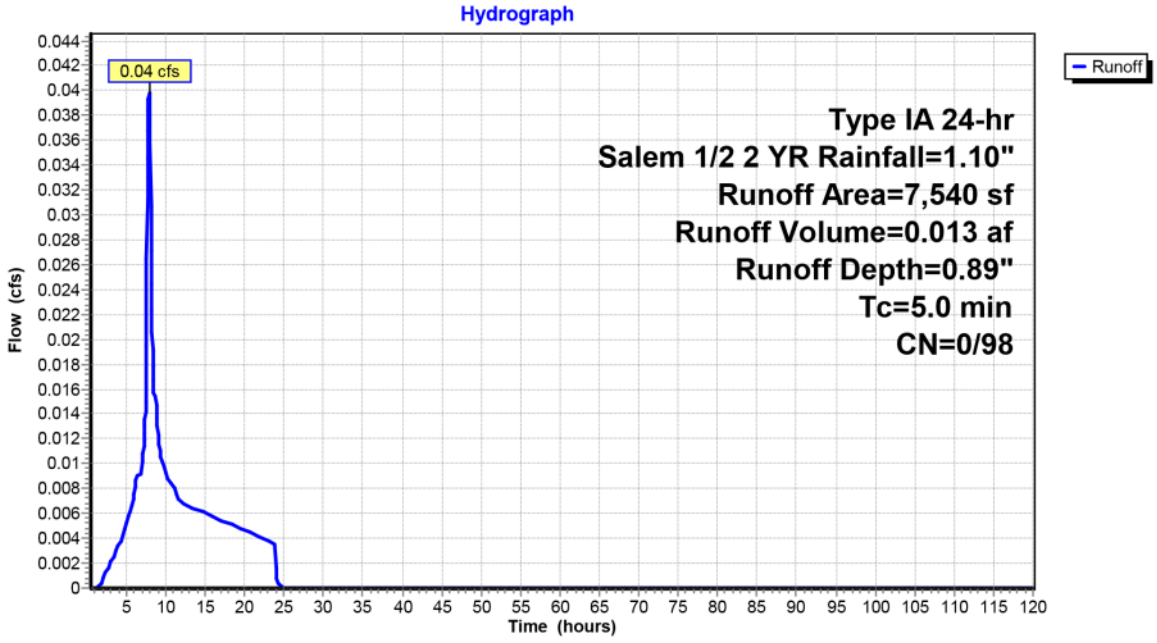
Runoff = 0.04 cfs @ 7.92 hrs, Volume= 0.013 af, Depth= 0.89"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

Area (sf)	CN	Description
7,540	98	Paved parking, HSG D
7,540	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment B&B: Boone & Battle



Summary for Subcatchment 1S: Basin 1

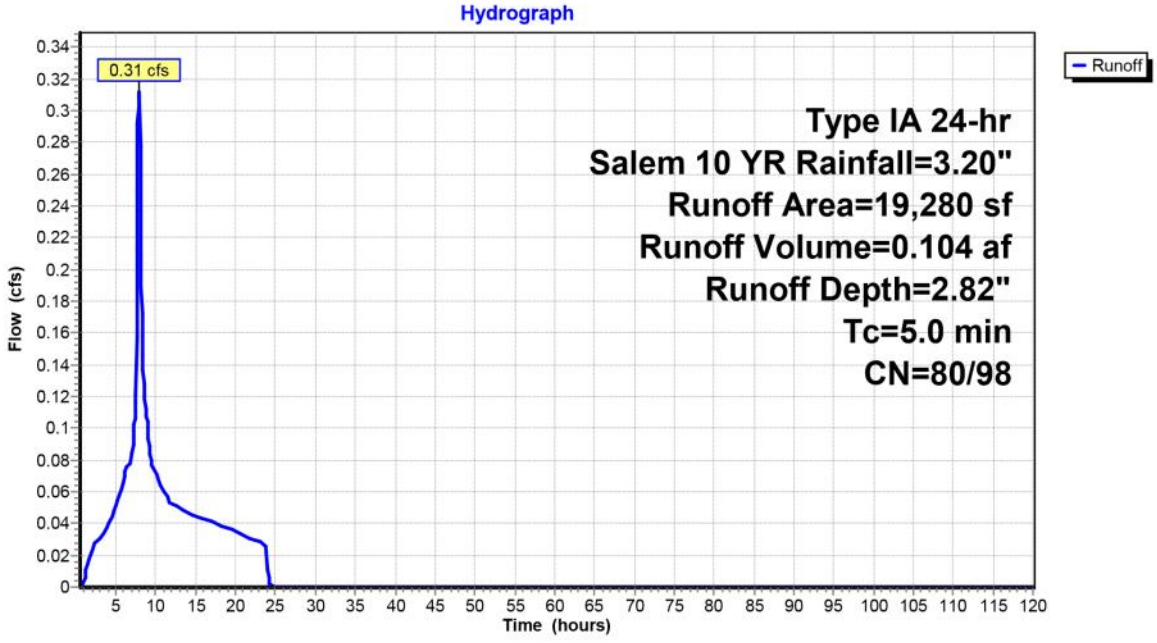
Runoff = 0.31 cfs @ 7.90 hrs, Volume= 0.104 af, Depth= 2.82"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	1,820	80	>75% Grass cover, Good, HSG D
*	17,460	98	Paved parking, HSG D
	19,280	96	Weighted Average
	1,820	80	9.44% Pervious Area
	17,460	98	90.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: Basin 1



Summary for Subcatchment 2S: Basin 2

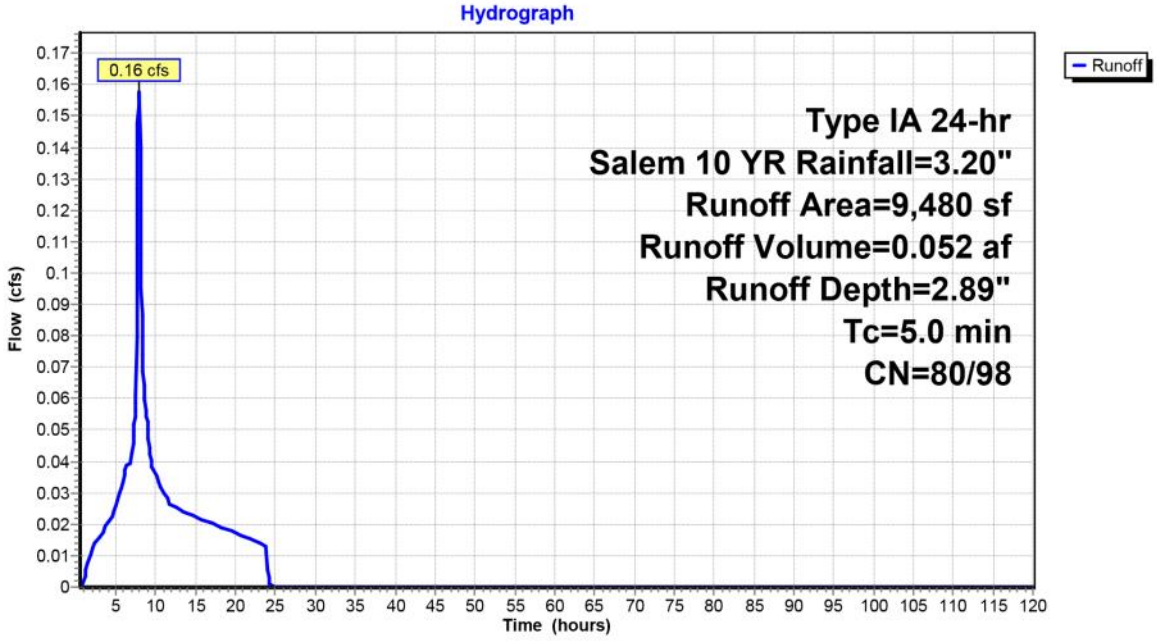
Runoff = 0.16 cfs @ 7.90 hrs, Volume= 0.052 af, Depth= 2.89"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	470	80	>75% Grass cover, Good, HSG D
*	9,010	98	Paved parking, HSG D
	9,480	97	Weighted Average
	470	80	4.96% Pervious Area
	9,010	98	95.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Basin 2



Summary for Subcatchment 3S: Basin 3

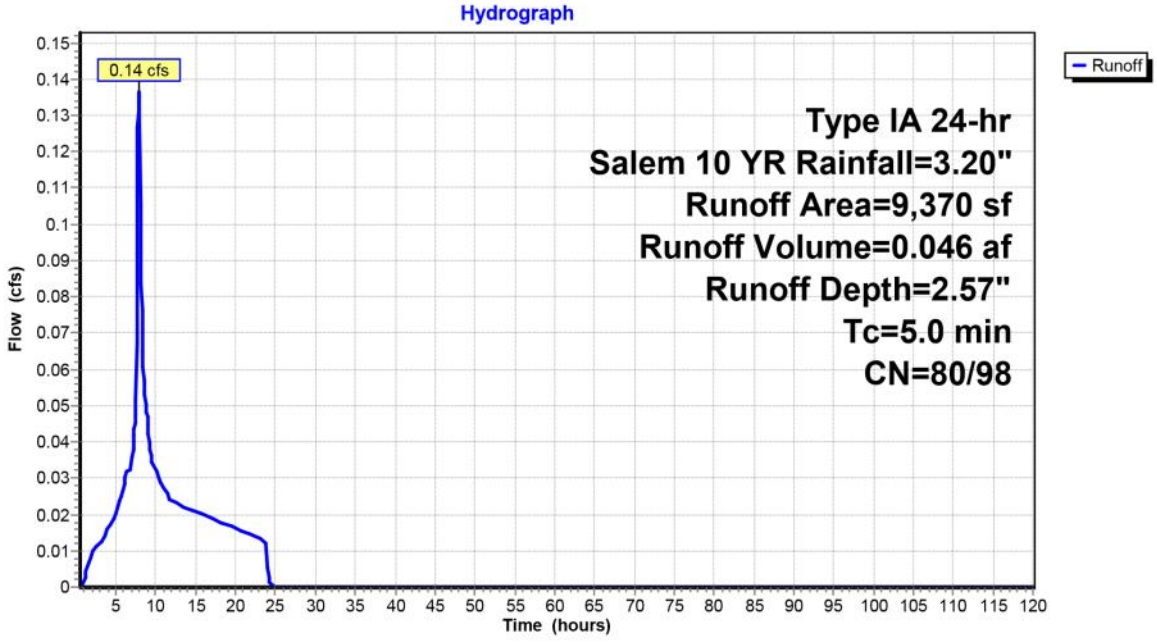
Runoff = 0.14 cfs @ 7.91 hrs, Volume= 0.046 af, Depth= 2.57"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
	2,360	80	>75% Grass cover, Good, HSG D
*	7,010	98	Paved parking, HSG D
	9,370	93	Weighted Average
	2,360	80	25.19% Pervious Area
	7,010	98	74.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Basin 3



Summary for Subcatchment 4S: Basin 4

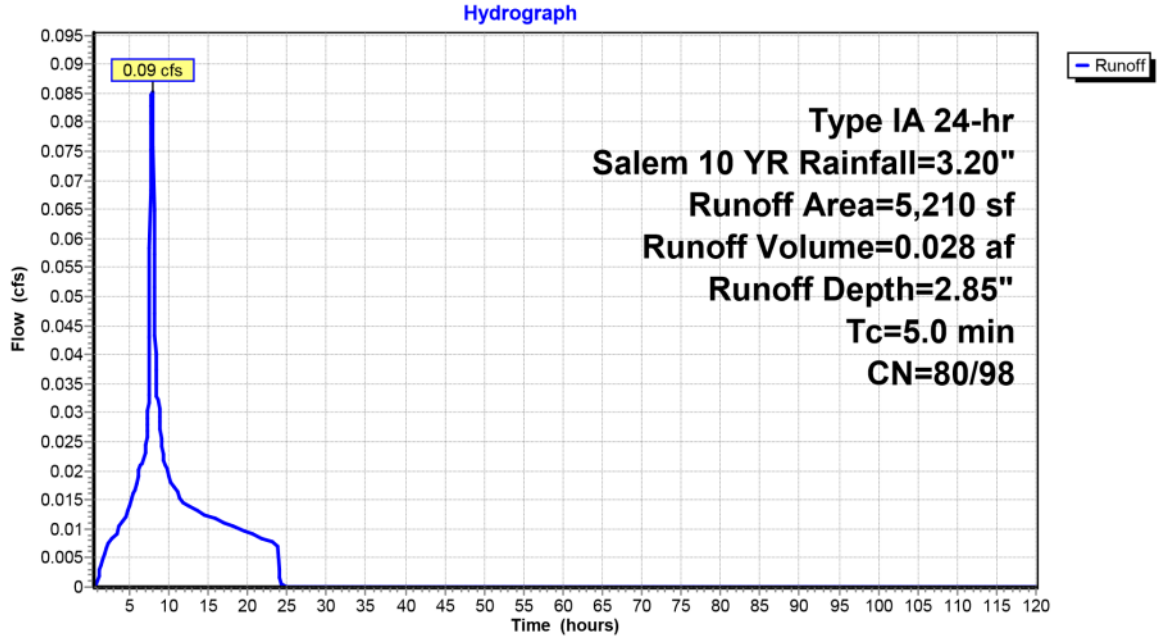
Runoff = 0.09 cfs @ 7.90 hrs, Volume= 0.028 af, Depth= 2.85"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	400	80	>75% Grass cover, Good, HSG D
*	4,810	98	Paved parking, HSG D
	5,210	97	Weighted Average
	400	80	7.68% Pervious Area
	4,810	98	92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Basin 4



Summary for Subcatchment 5S: Basin 5

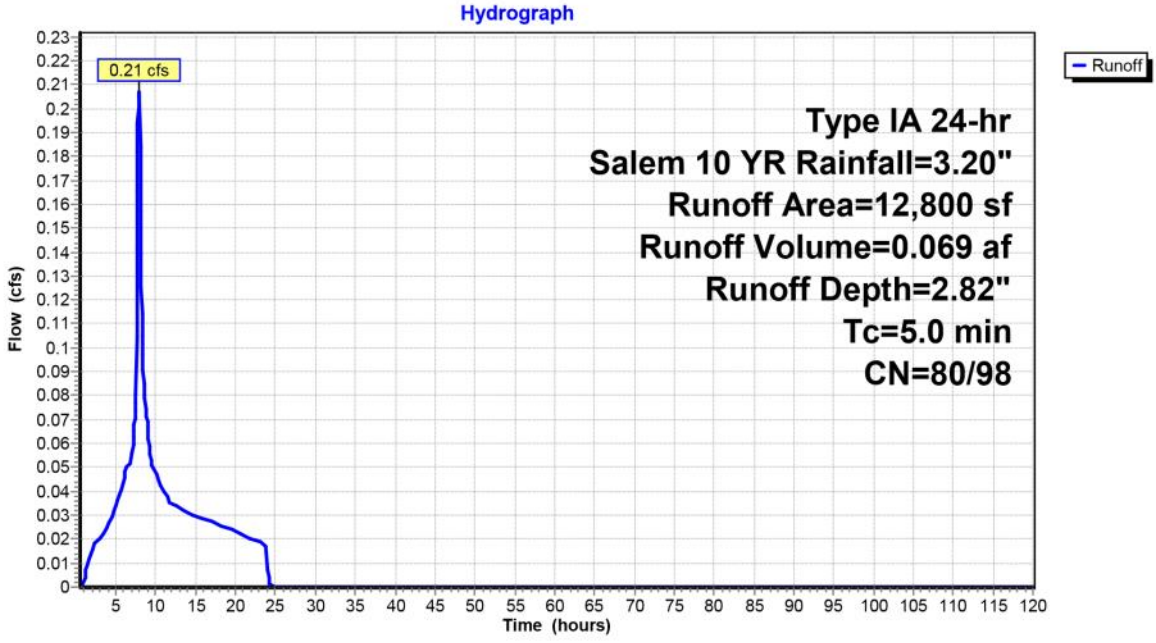
Runoff = 0.21 cfs @ 7.90 hrs, Volume= 0.069 af, Depth= 2.82"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	1,220	80	>75% Grass cover, Good, HSG D
*	11,580	98	Paved parking, HSG D
	12,800	96	Weighted Average
	1,220	80	9.53% Pervious Area
	11,580	98	90.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Basin 5



Summary for Subcatchment 6S: Basin 6

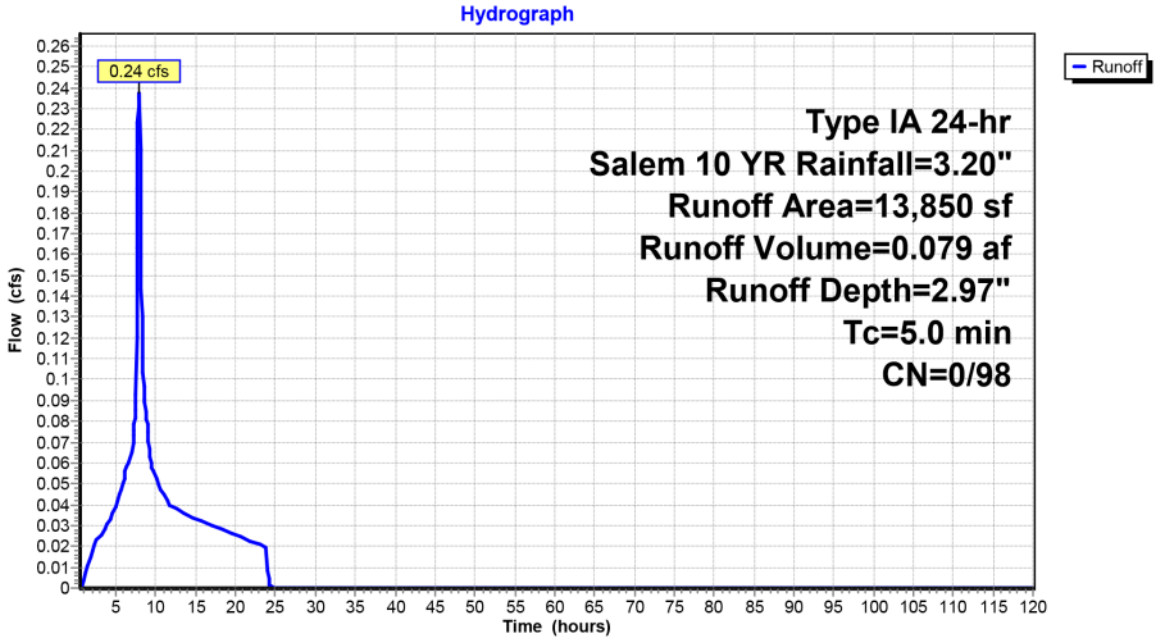
Runoff = 0.24 cfs @ 7.90 hrs, Volume= 0.079 af, Depth= 2.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	13,850	98	Paved parking, HSG D
	13,850	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Basin 6



Summary for Subcatchment 7S: Basin 7

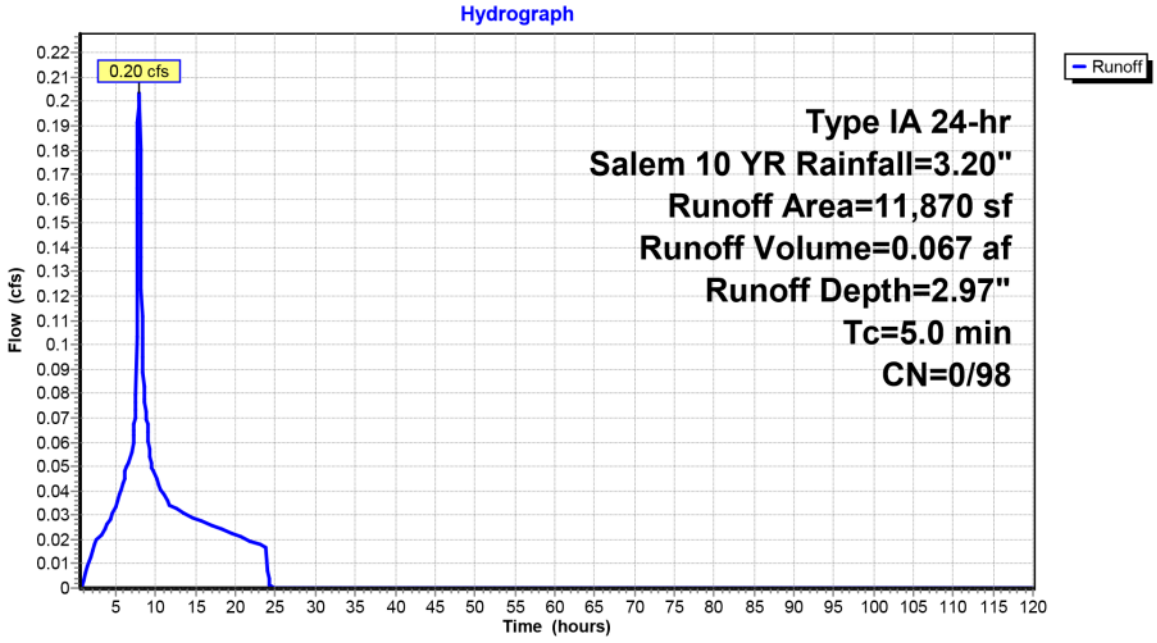
Runoff = 0.20 cfs @ 7.90 hrs, Volume= 0.067 af, Depth= 2.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

	Area (sf)	CN	Description
*	11,870	98	Paved parking, HSG D
	11,870	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Basin 7



Summary for Subcatchment B&B: Boone & Battle

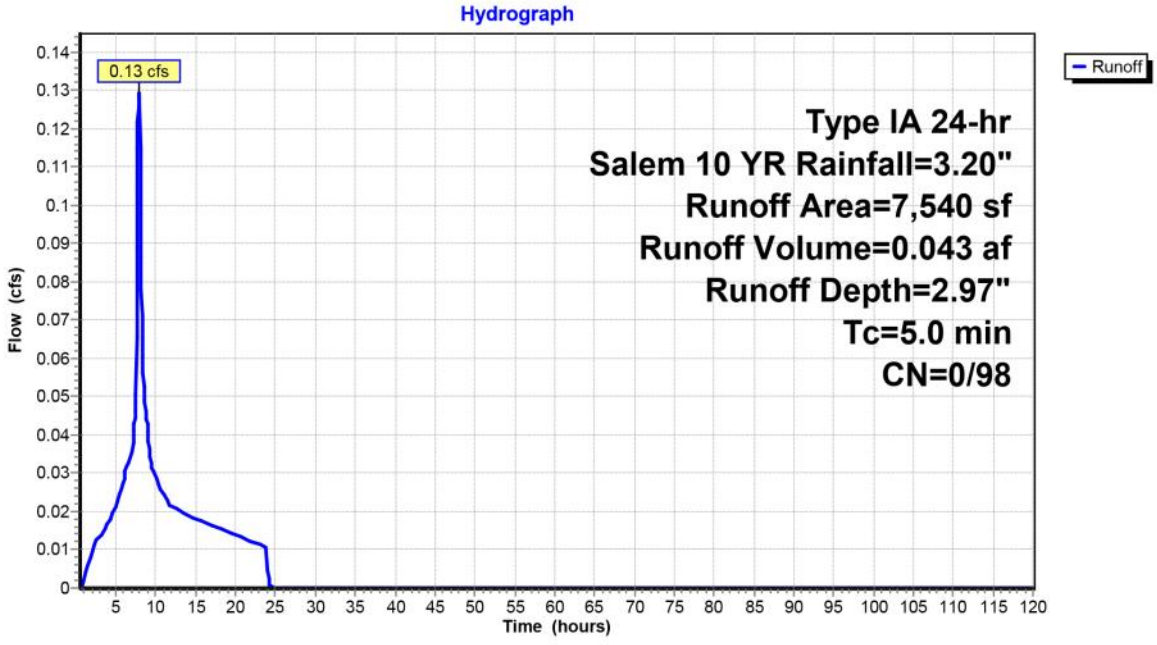
Runoff = 0.13 cfs @ 7.90 hrs, Volume= 0.043 af, Depth= 2.97"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

Area (sf)	CN	Description
7,540	98	Paved parking, HSG D
7,540	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment B&B: Boone & Battle



Summary for Subcatchment 1S: Basin 1

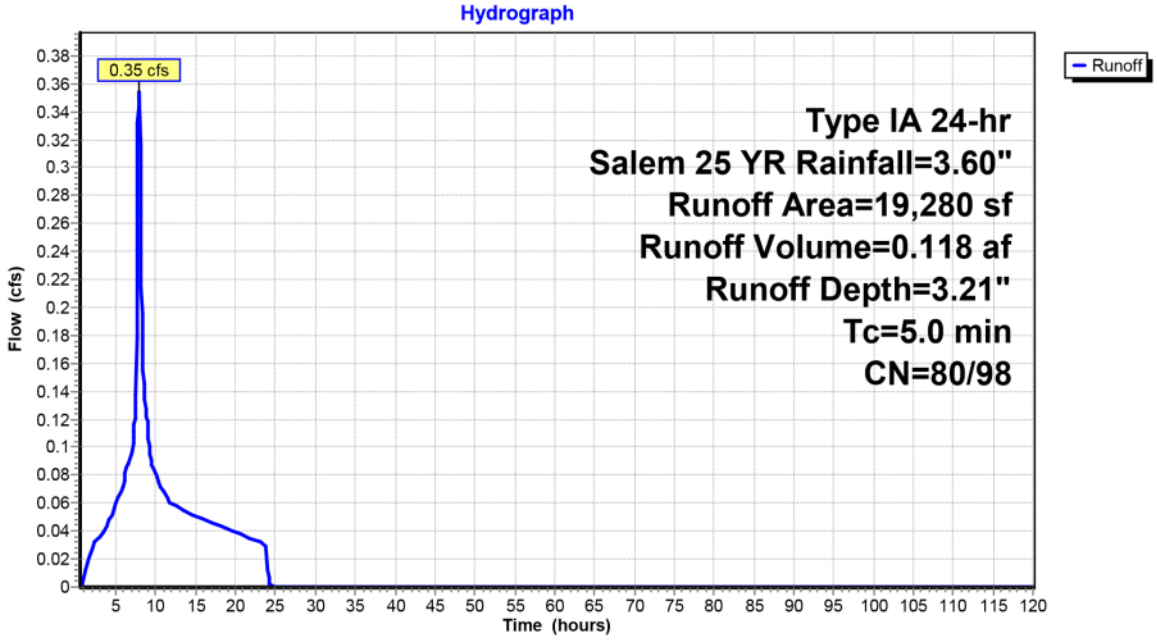
Runoff = 0.35 cfs @ 7.90 hrs, Volume= 0.118 af, Depth= 3.21"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

	Area (sf)	CN	Description
*	1,820	80	>75% Grass cover, Good, HSG D
*	17,460	98	Paved parking, HSG D
	19,280	96	Weighted Average
	1,820	80	9.44% Pervious Area
	17,460	98	90.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: Basin 1



Summary for Subcatchment 2S: Basin 2

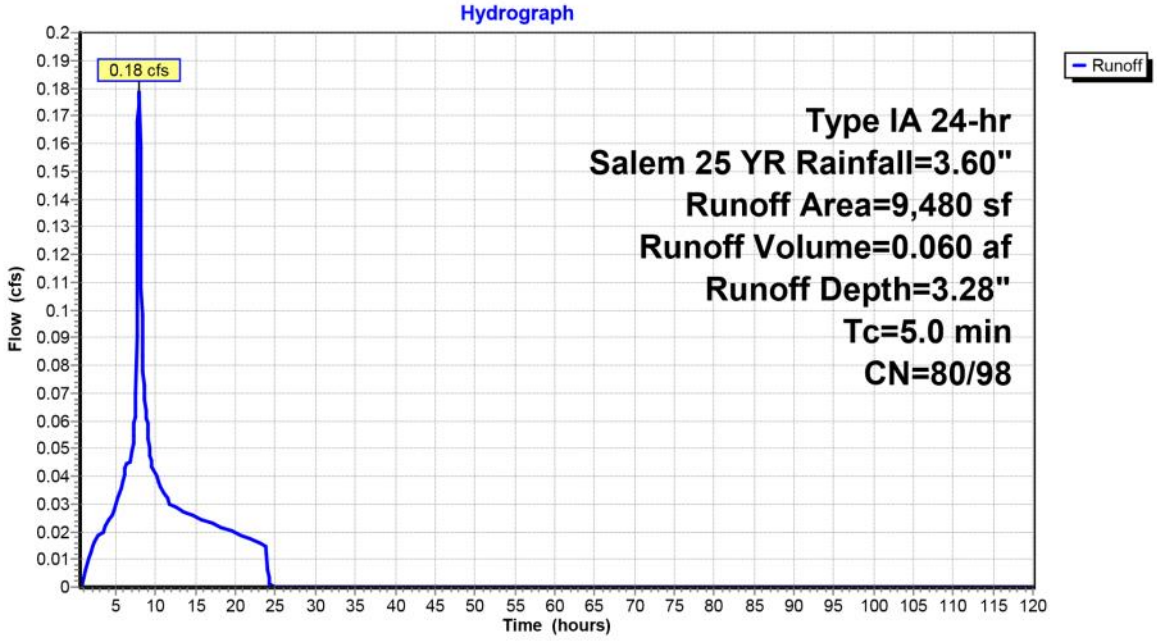
Runoff = 0.18 cfs @ 7.90 hrs, Volume= 0.060 af, Depth= 3.28"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

	Area (sf)	CN	Description
*	470	80	>75% Grass cover, Good, HSG D
*	9,010	98	Paved parking, HSG D
	9,480	97	Weighted Average
	470	80	4.96% Pervious Area
	9,010	98	95.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Basin 2



Summary for Subcatchment 3S: Basin 3

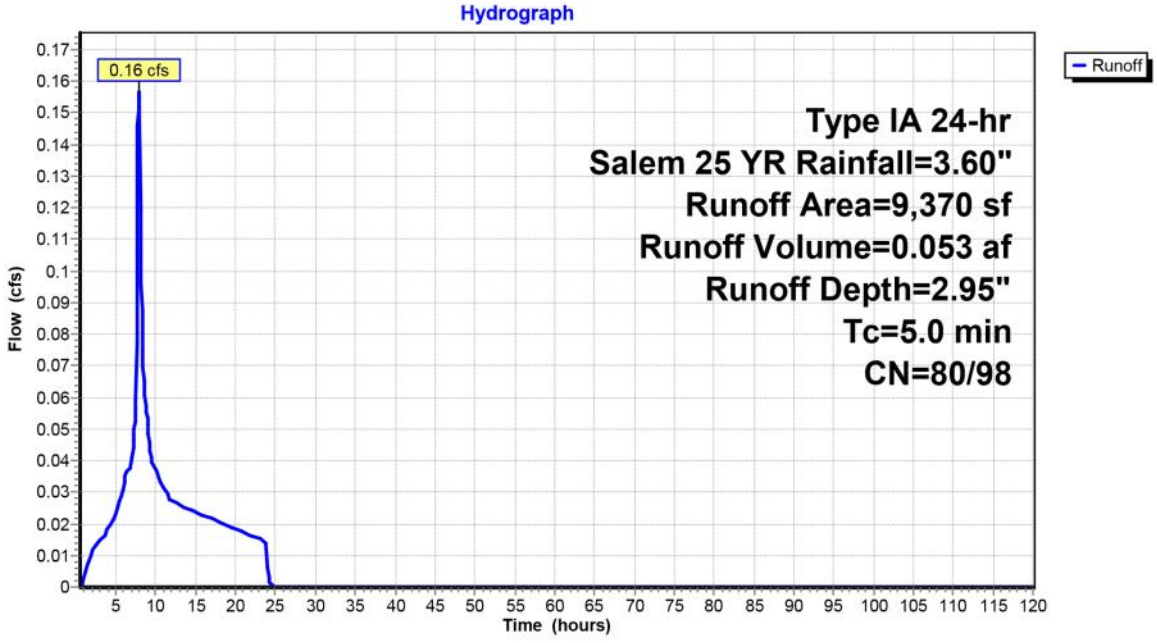
Runoff = 0.16 cfs @ 7.91 hrs, Volume= 0.053 af, Depth= 2.95"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

	Area (sf)	CN	Description
	2,360	80	>75% Grass cover, Good, HSG D
*	7,010	98	Paved parking, HSG D
	9,370	93	Weighted Average
	2,360	80	25.19% Pervious Area
	7,010	98	74.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Basin 3



Summary for Subcatchment 4S: Basin 4

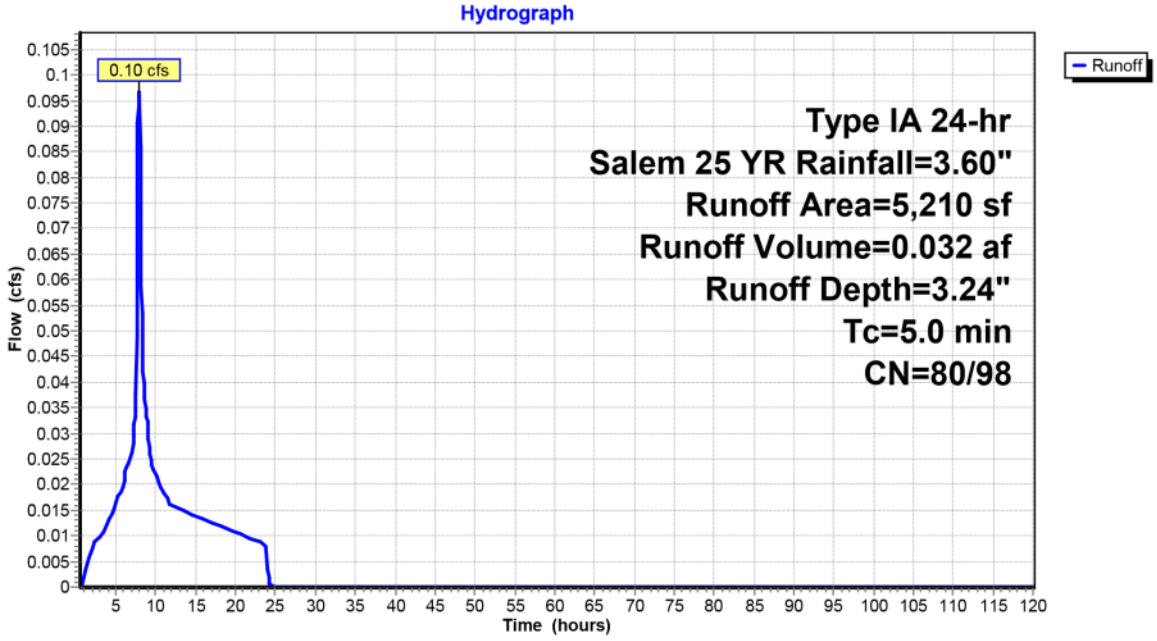
Runoff = 0.10 cfs @ 7.90 hrs, Volume= 0.032 af, Depth= 3.24"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

	Area (sf)	CN	Description
*	400	80	>75% Grass cover, Good, HSG D
*	4,810	98	Paved parking, HSG D
	5,210	97	Weighted Average
	400	80	7.68% Pervious Area
	4,810	98	92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Basin 4



Summary for Subcatchment 5S: Basin 5

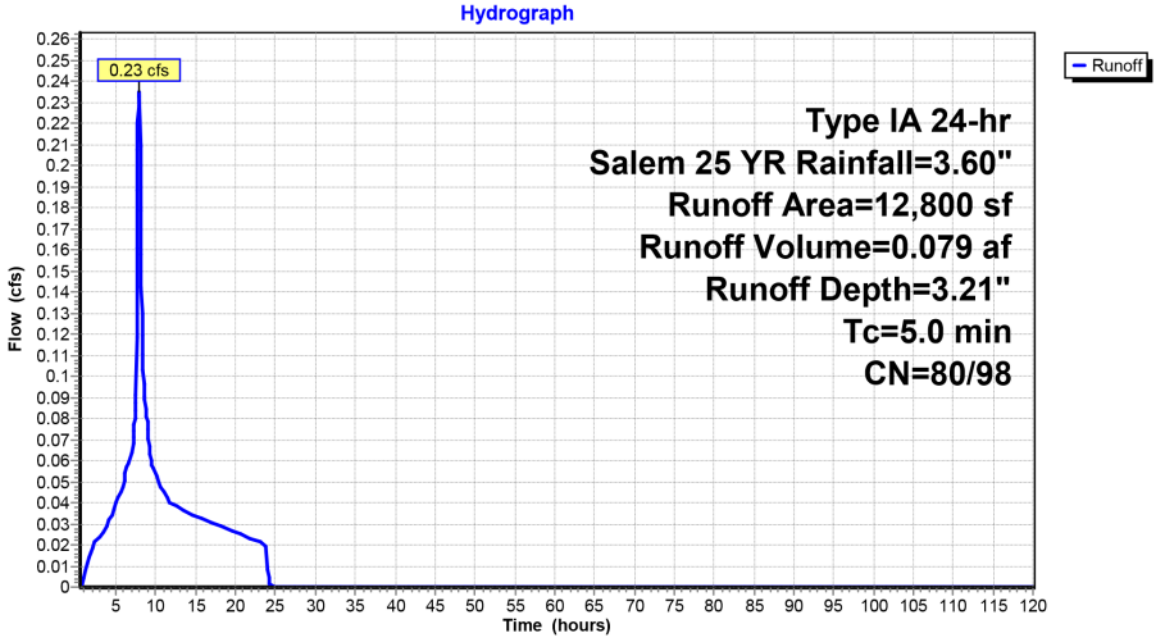
Runoff = 0.23 cfs @ 7.90 hrs, Volume= 0.079 af, Depth= 3.21"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

	Area (sf)	CN	Description
*	1,220	80	>75% Grass cover, Good, HSG D
*	11,580	98	Paved parking, HSG D
	12,800	96	Weighted Average
	1,220	80	9.53% Pervious Area
	11,580	98	90.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Basin 5



Summary for Subcatchment 6S: Basin 6

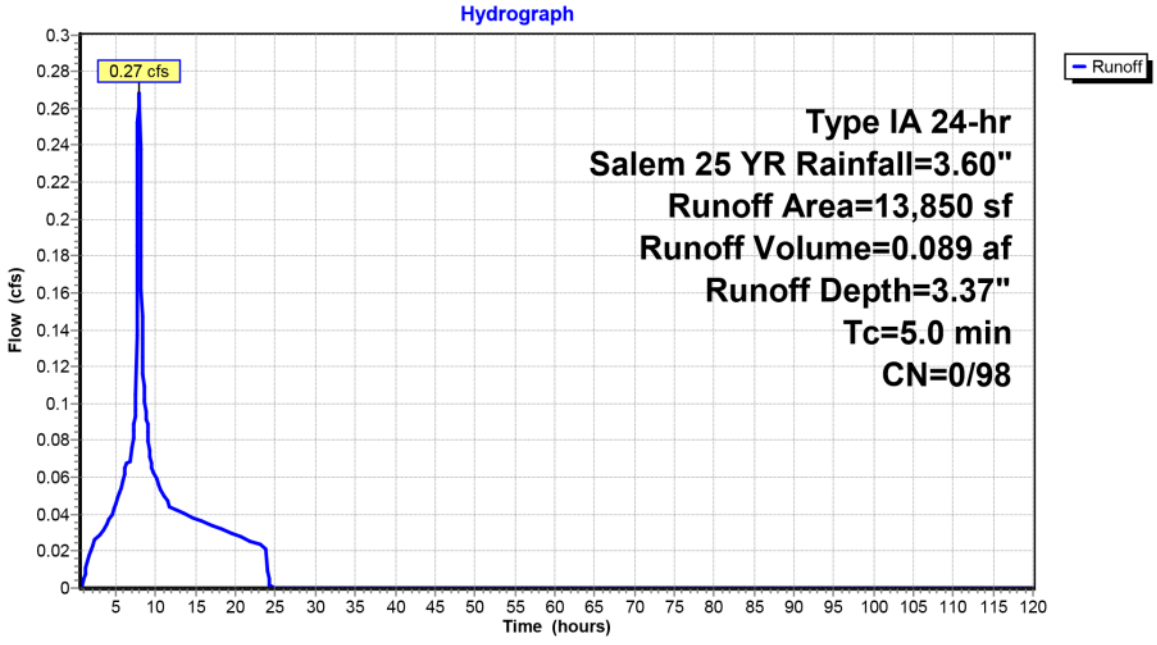
Runoff = 0.27 cfs @ 7.90 hrs, Volume= 0.089 af, Depth= 3.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

	Area (sf)	CN	Description
*	13,850	98	Paved parking, HSG D
	13,850	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Basin 6



Summary for Subcatchment 7S: Basin 7

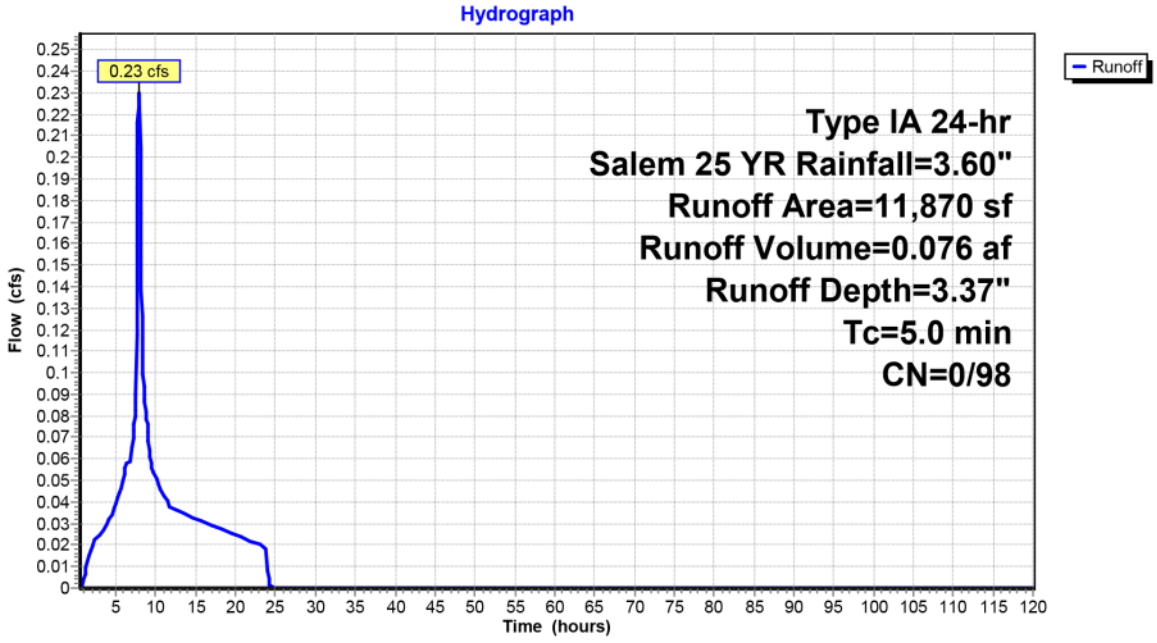
Runoff = 0.23 cfs @ 7.90 hrs, Volume= 0.076 af, Depth= 3.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

	Area (sf)	CN	Description
*	11,870	98	Paved parking, HSG D
	11,870	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Basin 7



Summary for Subcatchment B&B: Boone & Battle

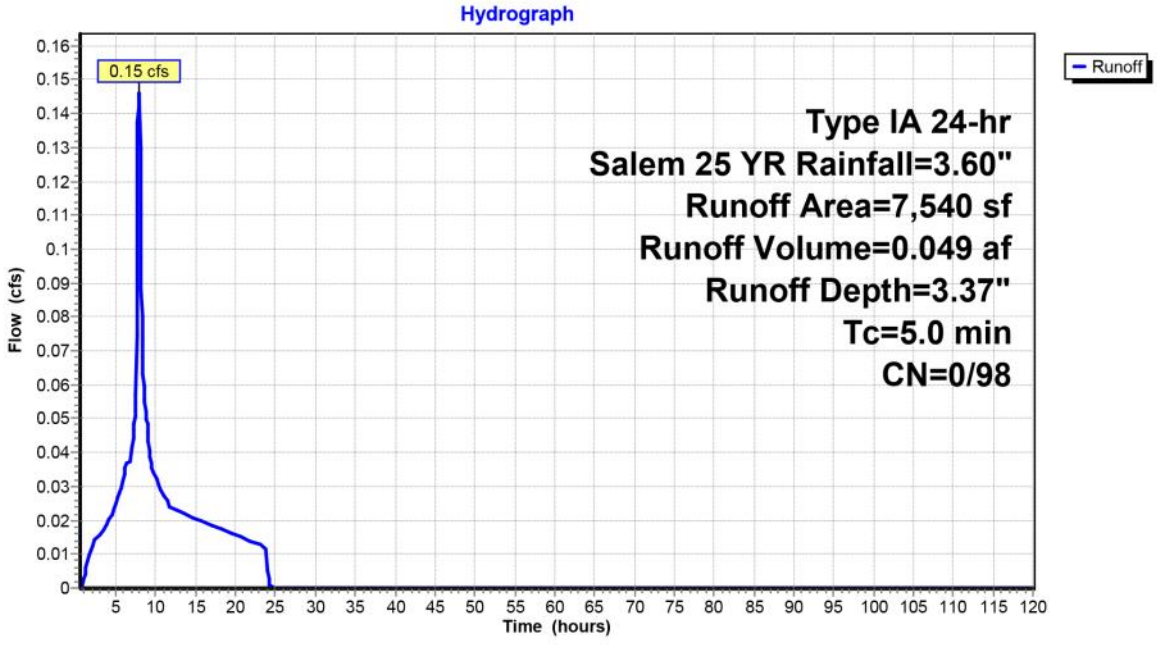
Runoff = 0.15 cfs @ 7.90 hrs, Volume= 0.049 af, Depth= 3.37"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

Area (sf)	CN	Description
7,540	98	Paved parking, HSG D
7,540	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment B&B: Boone & Battle



Summary for Subcatchment 1S: Basin 1

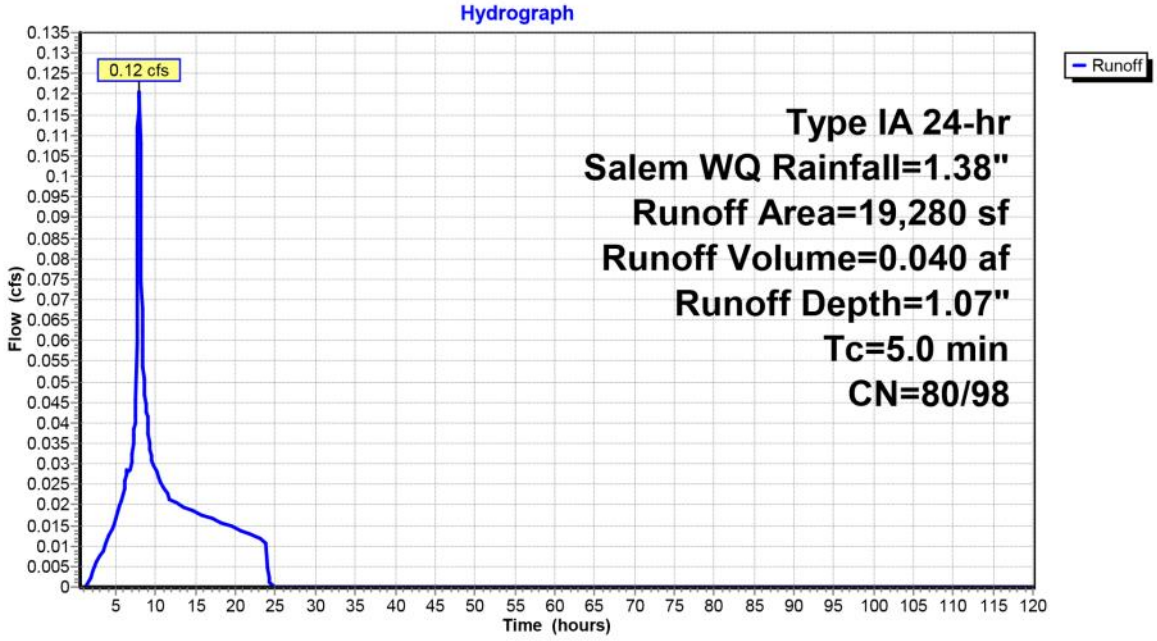
Runoff = 0.12 cfs @ 7.92 hrs, Volume= 0.040 af, Depth= 1.07"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

	Area (sf)	CN	Description
*	1,820	80	>75% Grass cover, Good, HSG D
*	17,460	98	Paved parking, HSG D
	19,280	96	Weighted Average
	1,820	80	9.44% Pervious Area
	17,460	98	90.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: Basin 1



Summary for Subcatchment 2S: Basin 2

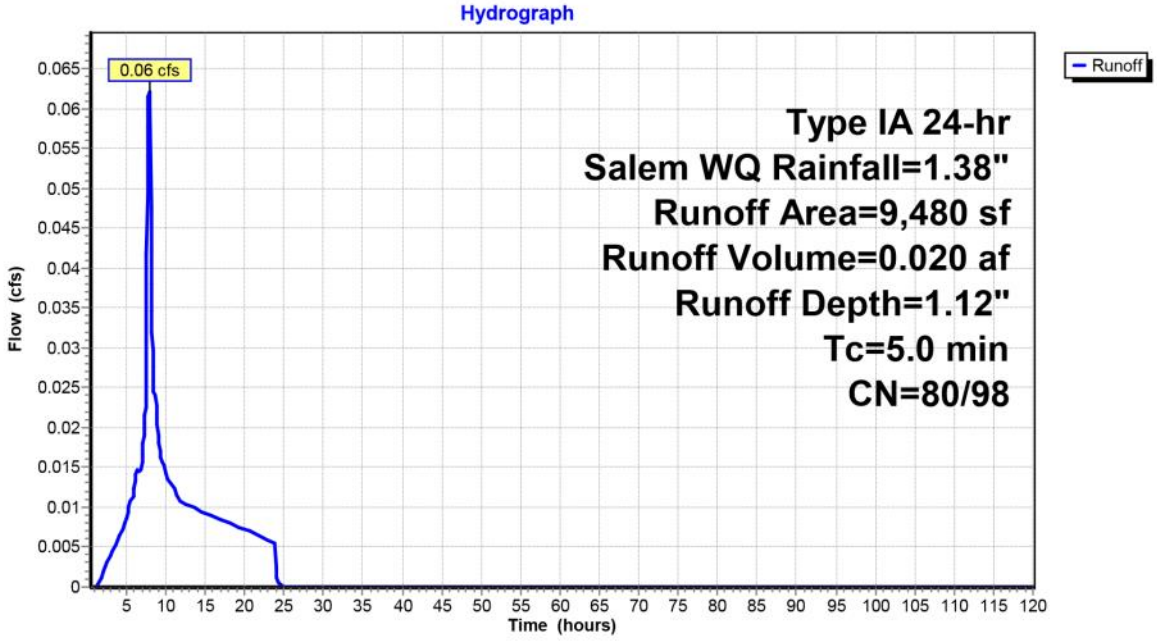
Runoff = 0.06 cfs @ 7.91 hrs, Volume= 0.020 af, Depth= 1.12"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

	Area (sf)	CN	Description
*	470	80	>75% Grass cover, Good, HSG D
*	9,010	98	Paved parking, HSG D
	9,480	97	Weighted Average
	470	80	4.96% Pervious Area
	9,010	98	95.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Basin 2



Summary for Subcatchment 3S: Basin 3

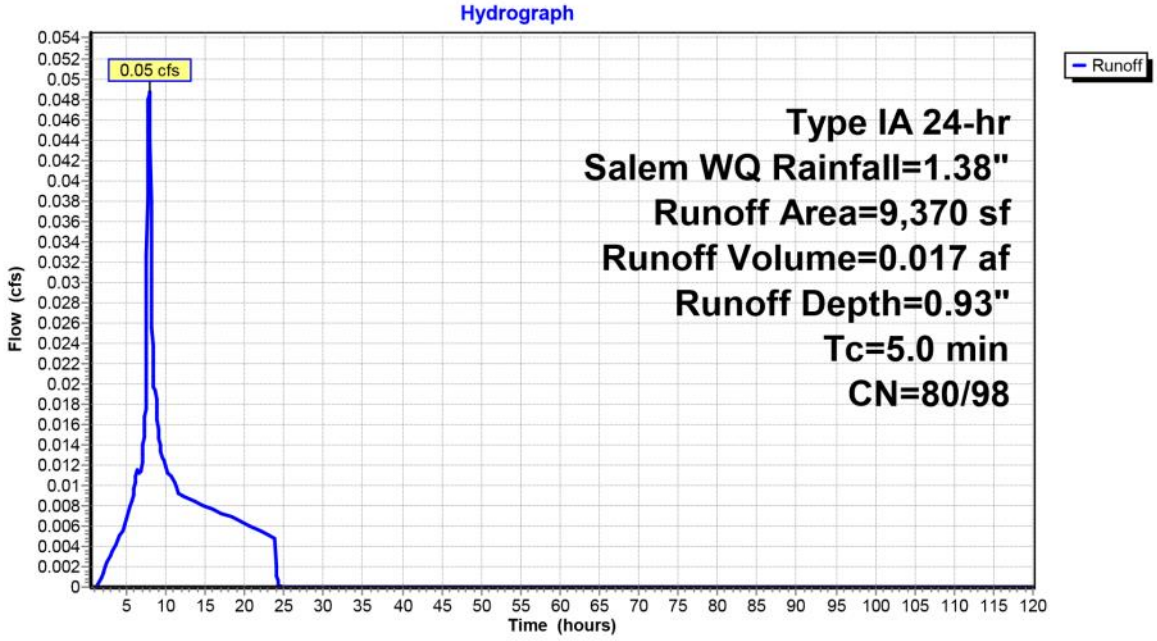
Runoff = 0.05 cfs @ 7.93 hrs, Volume= 0.017 af, Depth= 0.93"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

	Area (sf)	CN	Description
	2,360	80	>75% Grass cover, Good, HSG D
*	7,010	98	Paved parking, HSG D
	9,370	93	Weighted Average
	2,360	80	25.19% Pervious Area
	7,010	98	74.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Basin 3



Summary for Subcatchment 4S: Basin 4

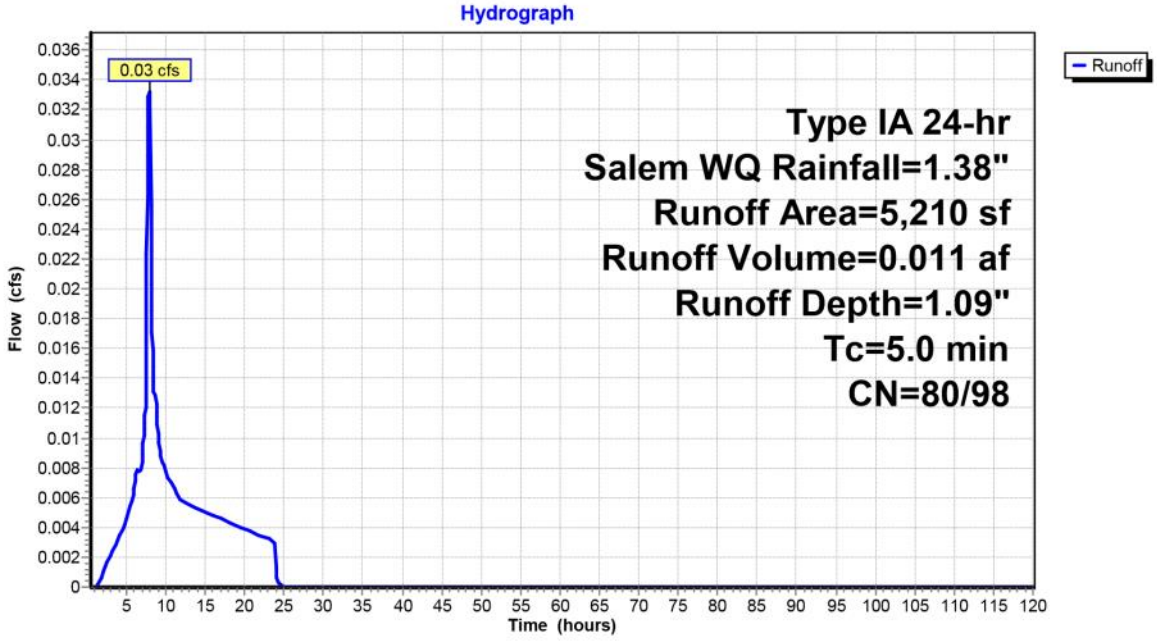
Runoff = 0.03 cfs @ 7.91 hrs, Volume= 0.011 af, Depth= 1.09"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

	Area (sf)	CN	Description
*	400	80	>75% Grass cover, Good, HSG D
*	4,810	98	Paved parking, HSG D
	5,210	97	Weighted Average
	400	80	7.68% Pervious Area
	4,810	98	92.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Basin 4



Summary for Subcatchment 5S: Basin 5

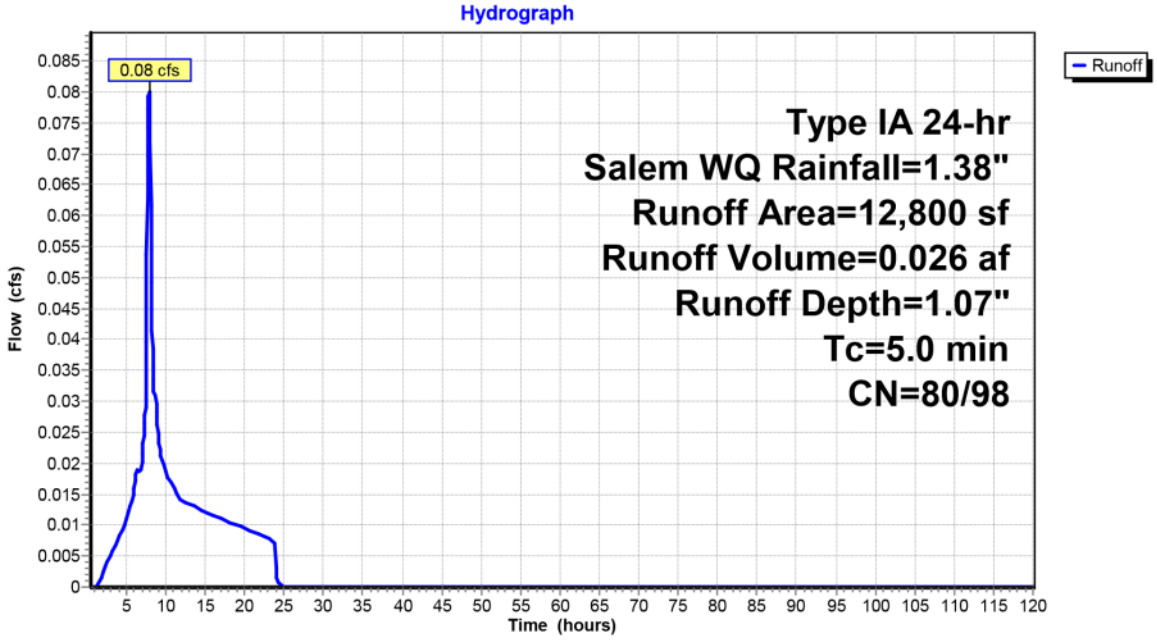
Runoff = 0.08 cfs @ 7.92 hrs, Volume= 0.026 af, Depth= 1.07"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

	Area (sf)	CN	Description
*	1,220	80	>75% Grass cover, Good, HSG D
*	11,580	98	Paved parking, HSG D
	12,800	96	Weighted Average
	1,220	80	9.53% Pervious Area
	11,580	98	90.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Basin 5



Summary for Subcatchment 6S: Basin 6

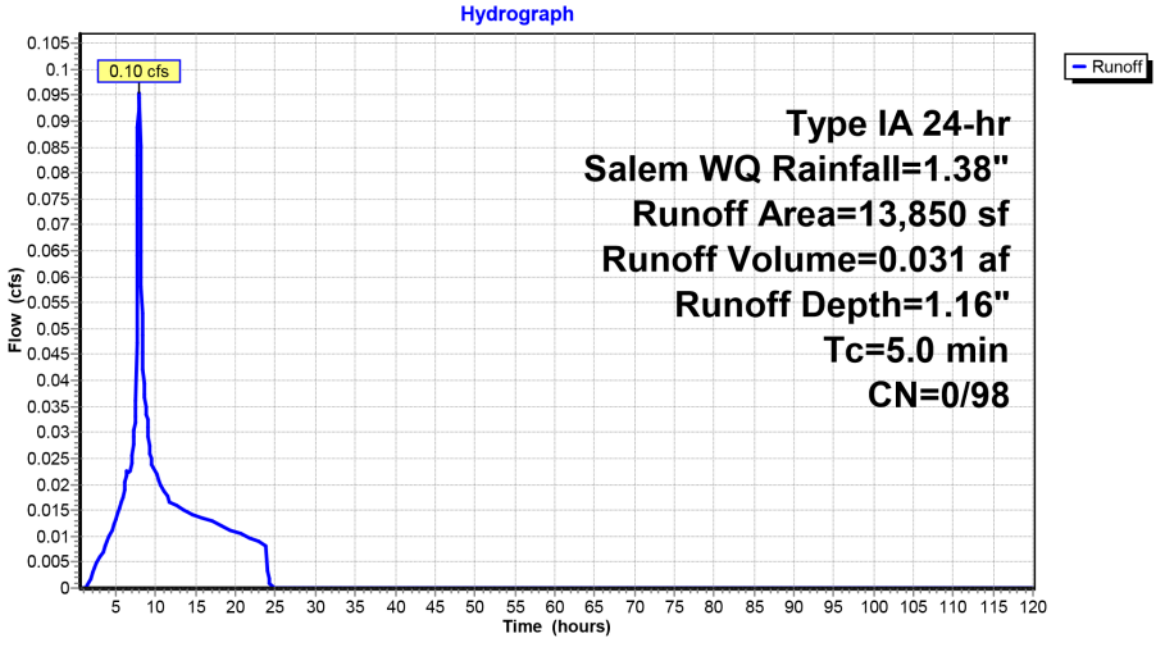
Runoff = 0.10 cfs @ 7.91 hrs, Volume= 0.031 af, Depth= 1.16"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

	Area (sf)	CN	Description
*	13,850	98	Paved parking, HSG D
	13,850	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Basin 6



Summary for Subcatchment 7S: Basin 7

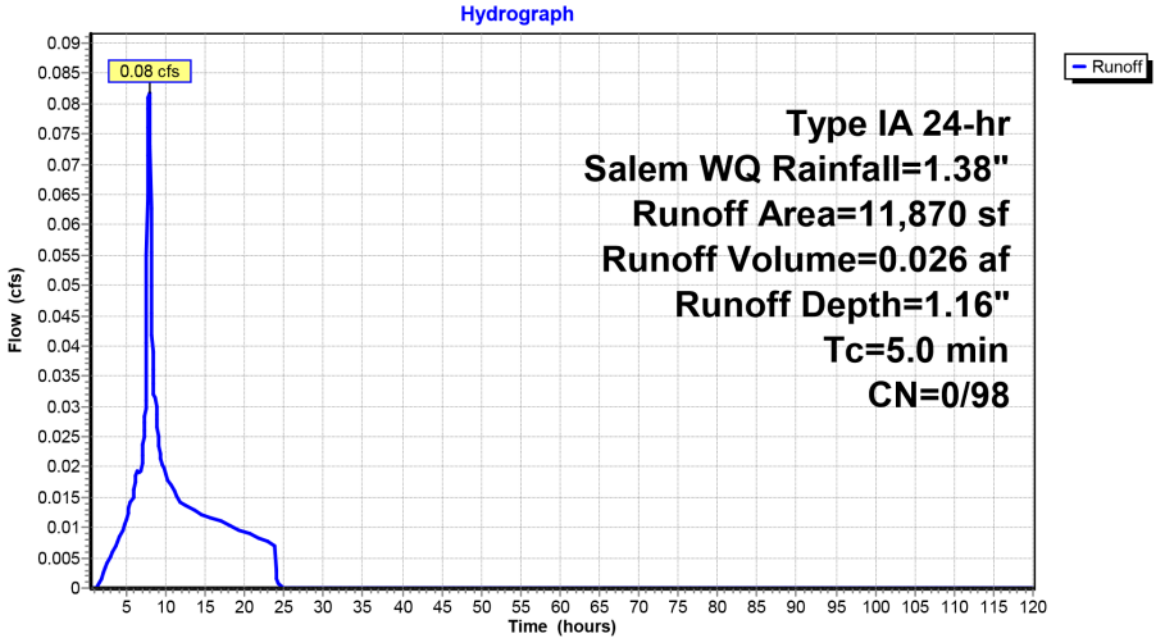
Runoff = 0.08 cfs @ 7.91 hrs, Volume= 0.026 af, Depth= 1.16"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

	Area (sf)	CN	Description
*	11,870	98	Paved parking, HSG D
	11,870	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Basin 7



Summary for Subcatchment B&B: Boone & Battle

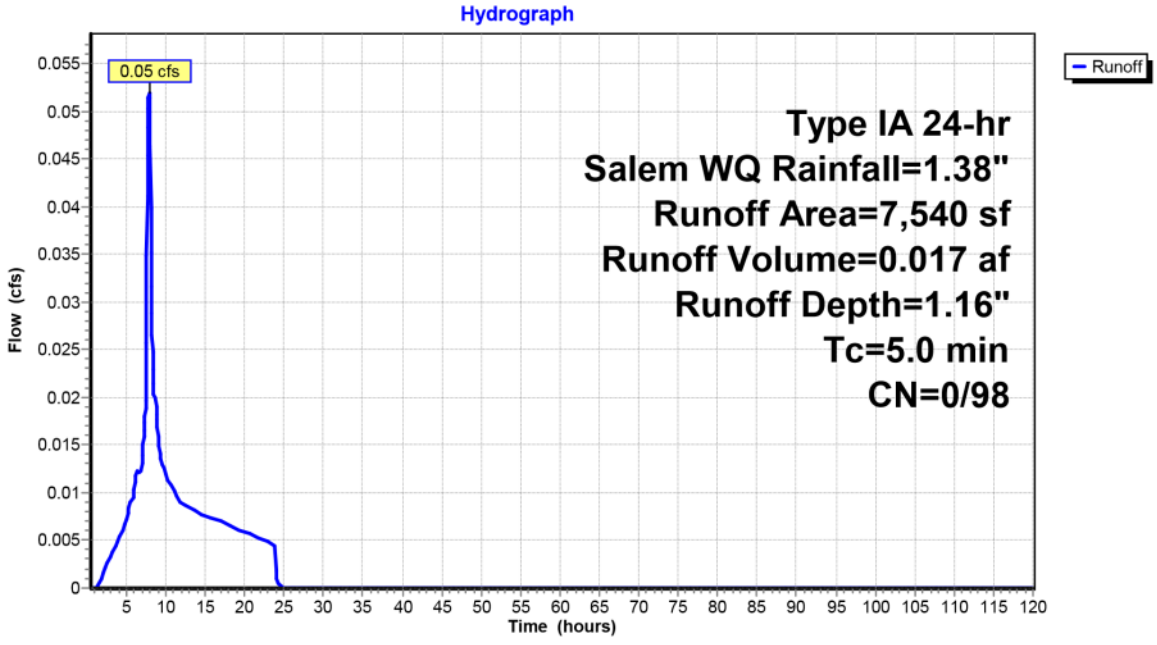
Runoff = 0.05 cfs @ 7.91 hrs, Volume= 0.017 af, Depth= 1.16"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

Area (sf)	CN	Description
7,540	98	Paved parking, HSG D
7,540	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment B&B: Boone & Battle



Summary for Pond P1: GSI-1

Inflow Area = 0.443 ac, 90.56% Impervious, Inflow Depth = 0.82" for Salem 1/2 2 YR event
Inflow = 0.09 cfs @ 7.92 hrs, Volume= 0.030 af
Outflow = 0.02 cfs @ 9.89 hrs, Volume= 0.030 af, Atten= 76%, Lag= 118.4 min
Primary = 0.02 cfs @ 9.89 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 347.06' @ 9.89 hrs Surf.Area= 570 sf Storage= 379 cf

Plug-Flow detention time= 295.0 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 294.6 min (1,007.3 - 712.7)

Volume	Invert	Avail.Storage	Storage Description
#1	345.40'	679 cf	**100' Planter (Prismatic)** Listed below (Recalc)
#2	345.40'	611 cf	**90' Planter (Prismatic)** Listed below (Recalc)
		1,291 cf	Total Available Storage

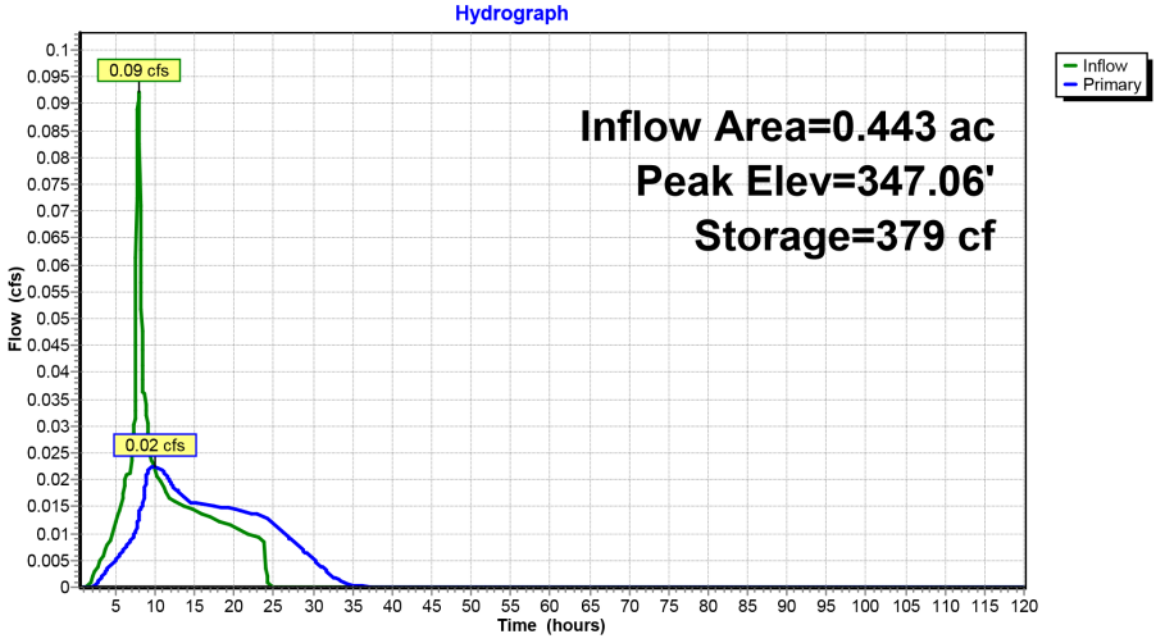
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.40	300	0.0	0	0
348.40	300	40.0	360	360
348.65	300	40.0	30	390
350.15	40	0.1	0	390
350.65	340	100.0	95	485
350.85	400	100.0	74	559
351.15	400	100.0	120	679

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.40	270	0.0	0	0
348.40	270	40.0	324	324
348.65	270	40.0	27	351
350.15	36	0.1	0	351
350.65	306	100.0	86	437
350.85	360	100.0	67	503
351.15	360	100.0	108	611

Device	Routing	Invert	Outlet Devices
#1	Primary	345.40'	**0.7" Vert. Orifice/Grate** C= 0.600
#2	Primary	346.90'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Primary	351.05'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 9.89 hrs HW=347.06' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 6.15 fps)
└**2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 1.72 fps)
└**3=Overflow** (Controls 0.00 cfs)

Pond P1: GSI-1


Hydrograph
Inflow Area=0.443 ac
Peak Elev=347.06'
Storage=379 cf
0.09 cfs
0.02 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 0.005 0.01 0.015 0.02 0.025 0.03 0.035 0.04 0.045 0.05 0.055 0.06 0.065 0.07 0.075 0.08 0.085 0.09 0.095 0.1
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond P2: GSI 2

Inflow Area = 0.218 ac, 95.04% Impervious, Inflow Depth = 0.85" for Salem 1/2 2 YR event
Inflow = 0.05 cfs @ 7.92 hrs, Volume= 0.015 af
Outflow = 0.01 cfs @ 9.12 hrs, Volume= 0.015 af, Atten= 70%, Lag= 72.3 min
Primary = 0.01 cfs @ 9.12 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 346.97' @ 9.12 hrs Surf.Area= 270 sf Storage= 137 cf

Plug-Flow detention time= 112.2 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 112.3 min (822.9 - 710.7)

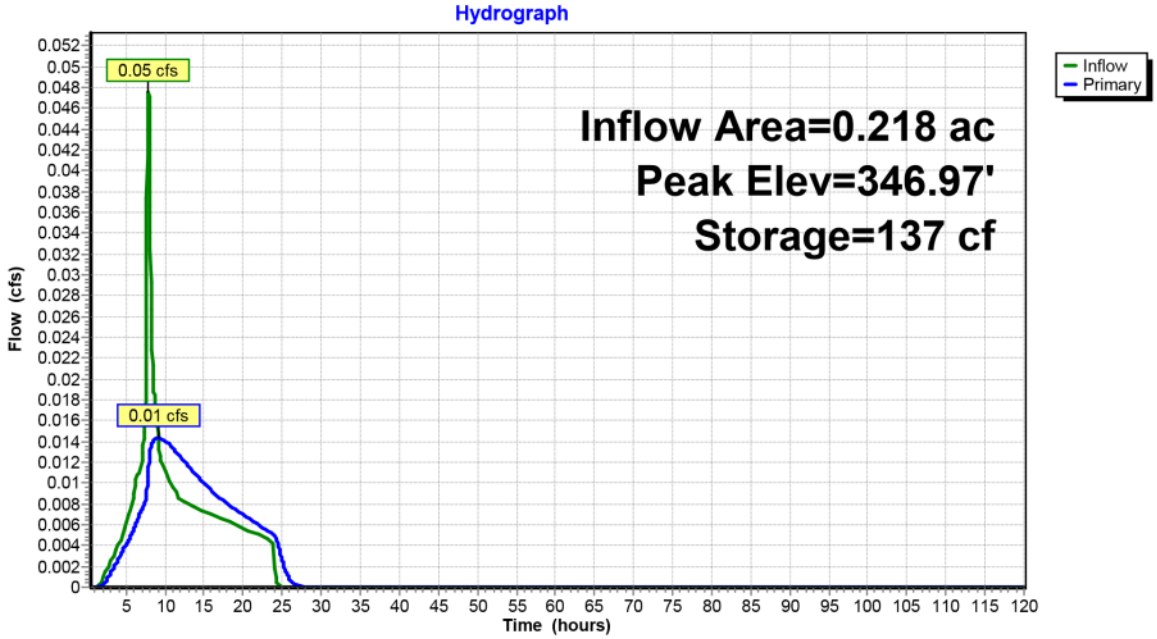
Volume	Invert	Avail.Storage	Storage Description
#1	345.70'	611 cf	**90' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.70	270	0.0	0	0
348.70	270	40.0	324	324
348.95	270	40.0	27	351
350.45	36	0.1	0	351
350.95	306	100.0	86	437
351.15	360	100.0	67	503
351.45	360	100.0	108	611

Device	Routing	Invert	Outlet Devices
#1	Primary	345.70'	**0.7" Vert. Orifice/Grate** C= 0.600
#2	Primary	347.20'	**0.5" Vert. Orifice/Grate** C= 0.600
#3	Primary	351.35'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 9.12 hrs HW=346.97' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 5.37 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Overflow** (Controls 0.00 cfs)

Pond P2: GSI 2


Hydrograph
Inflow Area=0.218 ac
Peak Elev=346.97'
Storage=137 cf
0.05 cfs
0.01 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0.052
0.05
0.048
0.046
0.044
0.042
0.04
0.038
0.036
0.034
0.032
0.03
0.028
0.026
0.024
0.022
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond P4: GSI 4

Inflow Area = 0.120 ac, 92.32% Impervious, Inflow Depth = 0.83" for Salem 1/2 2 YR event
Inflow = 0.03 cfs @ 7.92 hrs, Volume= 0.008 af
Outflow = 0.01 cfs @ 8.36 hrs, Volume= 0.008 af, Atten= 53%, Lag= 26.9 min
Primary = 0.01 cfs @ 8.36 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 345.86' @ 8.36 hrs Surf.Area= 90 sf Storage= 58 cf

Plug-Flow detention time= 73.9 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 73.8 min (785.7 - 711.9)

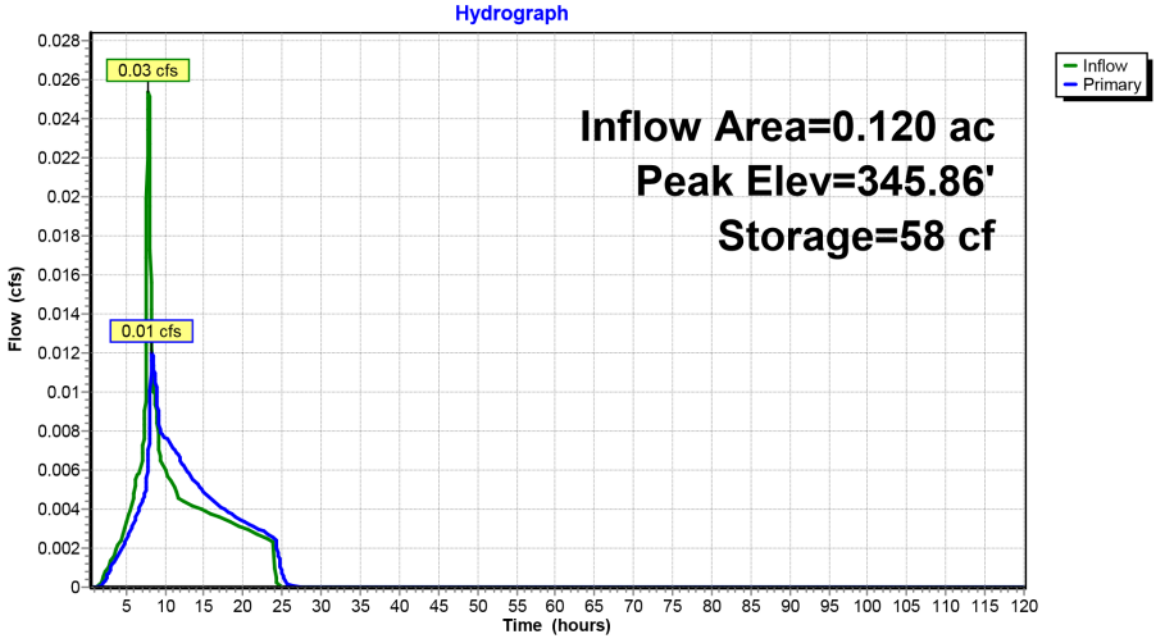
Volume	Invert	Avail.Storage	Storage Description
#1	344.25'	204 cf	**30' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.25	90	0.0	0	0
347.25	90	40.0	108	108
347.50	90	40.0	9	117
349.00	12	0.1	0	117
349.50	102	100.0	29	146
349.70	120	100.0	22	168
350.00	120	100.0	36	204

Device	Routing	Invert	Outlet Devices
#1	Primary	344.25'	**0.5" Vert. Orifice/Grate** C= 0.600
#2	Primary	345.75'	**0.7" Vert. Orifice/Grate** C= 0.600
#3	Primary	349.50'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 8.36 hrs HW=345.86' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 6.07 fps)
- **2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 1.39 fps)
- **3=Overflow** (Controls 0.00 cfs)

Pond P4: GSI 4


Hydrograph
Inflow
Primary
0.03 cfs
0.01 cfs
Inflow Area=0.120 ac
Peak Elev=345.86'
Storage=58 cf
Flow (cfs)
Time (hours)
0.028
0.026
0.024
0.022
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond P5: GSI - 5

Inflow Area = 0.294 ac, 90.47% Impervious, Inflow Depth = 0.81" for Salem 1/2 2 YR event
Inflow = 0.06 cfs @ 7.92 hrs, Volume= 0.020 af
Outflow = 0.03 cfs @ 8.32 hrs, Volume= 0.020 af, Atten= 50%, Lag= 24.3 min
Primary = 0.03 cfs @ 8.32 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 345.88' @ 8.32 hrs Surf.Area= 225 sf Storage= 167 cf

Plug-Flow detention time= 145.8 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 145.9 min (858.7 - 712.7)

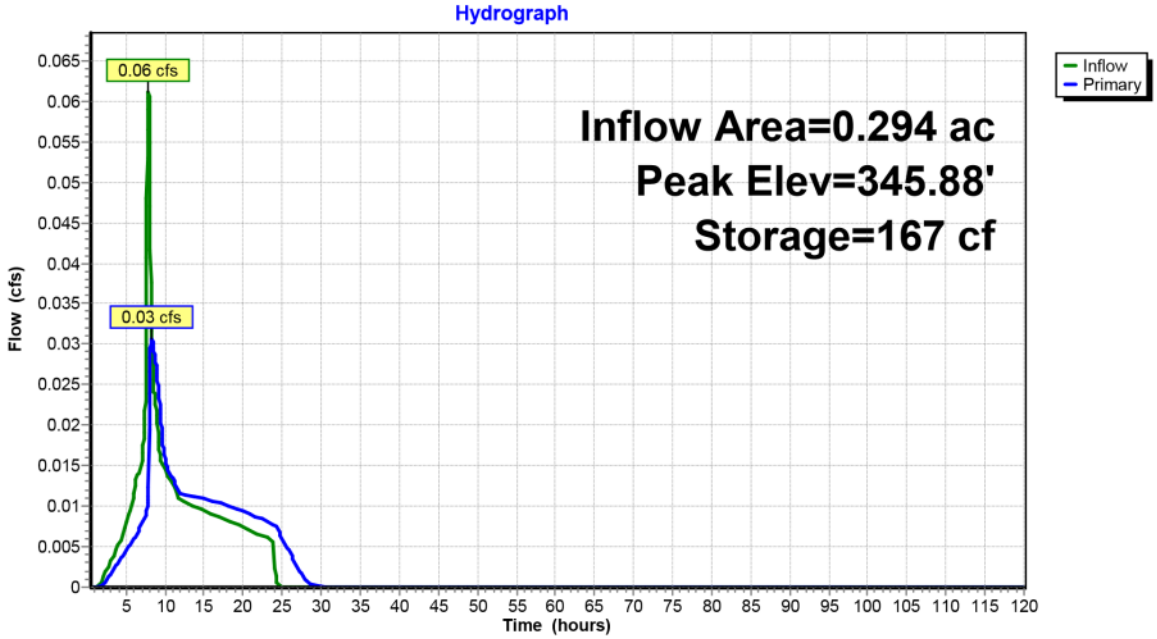
Volume	Invert	Avail.Storage	Storage Description
#1	344.02'	509 cf	**75' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.02	225	0.0	0	0
347.02	225	40.0	270	270
347.27	225	40.0	23	293
348.77	30	0.1	0	293
349.27	255	100.0	71	364
349.47	300	100.0	56	419
349.77	300	100.0	90	509

Device	Routing	Invert	Outlet Devices
#1	Primary	344.02'	**0.6" Vert. Orifice/Grate** C= 0.600
#2	Primary	345.52'	**1.1" Vert. Orifice/Grate** C= 0.600
#3	Primary	349.67'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.03 cfs @ 8.32 hrs HW=345.88' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 6.52 fps)
└**2=Orifice/Grate** (Orifice Controls 0.02 cfs @ 2.70 fps)
└**3=Overflow** (Controls 0.00 cfs)

Pond P5: GSI - 5

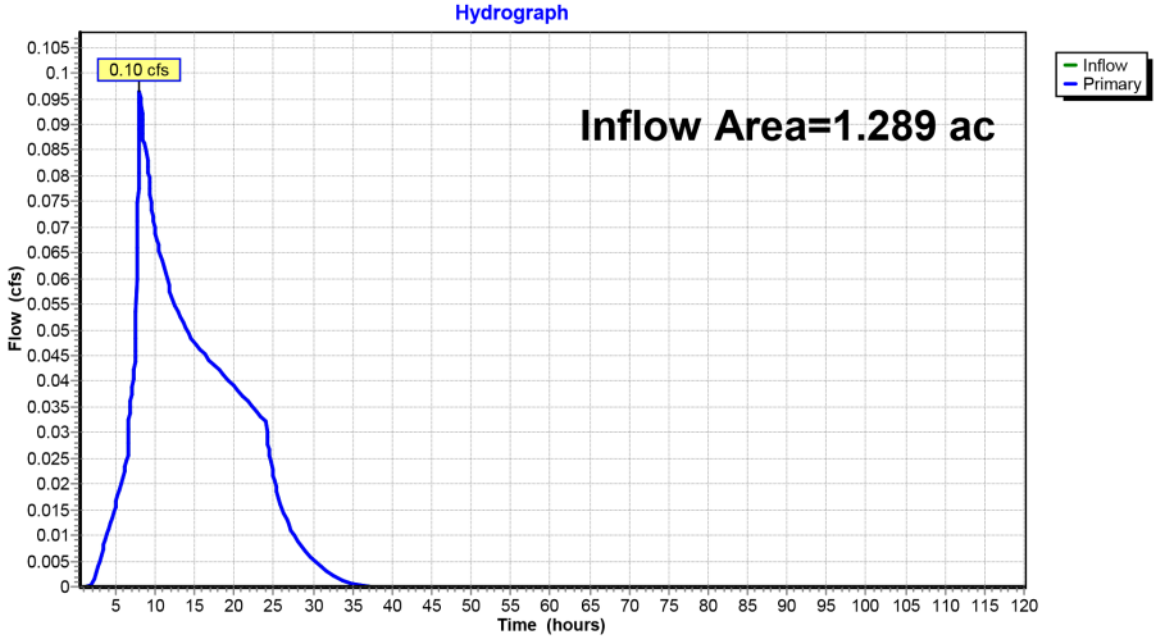

Hydrograph
Inflow Area=0.294 ac
Peak Elev=345.88'
Storage=167 cf
0.06 cfs
0.03 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.055
0.06
0.065
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Link L2: Developed Release

Inflow Area = 1.289 ac, 88.83% Impervious, Inflow Depth = 0.79" for Salem 1/2 2 YR event
Inflow = 0.10 cfs @ 8.06 hrs, Volume= 0.085 af
Primary = 0.10 cfs @ 8.06 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

Link L2: Developed Release



Summary for Pond P1: GSI-1

Inflow Area = 0.443 ac, 90.56% Impervious, Inflow Depth = 2.82" for Salem 10 YR event
Inflow = 0.31 cfs @ 7.90 hrs, Volume= 0.104 af
Outflow = 0.15 cfs @ 8.35 hrs, Volume= 0.104 af, Atten= 52%, Lag= 27.0 min
Primary = 0.15 cfs @ 8.35 hrs, Volume= 0.104 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 351.07' @ 8.35 hrs Surf.Area= 760 sf Storage= 1,230 cf

Plug-Flow detention time= 259.9 min calculated for 0.104 af (100% of inflow)
Center-of-Mass det. time= 259.4 min (933.1 - 673.7)

Volume	Invert	Avail.Storage	Storage Description
#1	345.40'	679 cf	**100' Planter (Prismatic)** Listed below (Recalc)
#2	345.40'	611 cf	**90' Planter (Prismatic)** Listed below (Recalc)
		1,291 cf	Total Available Storage

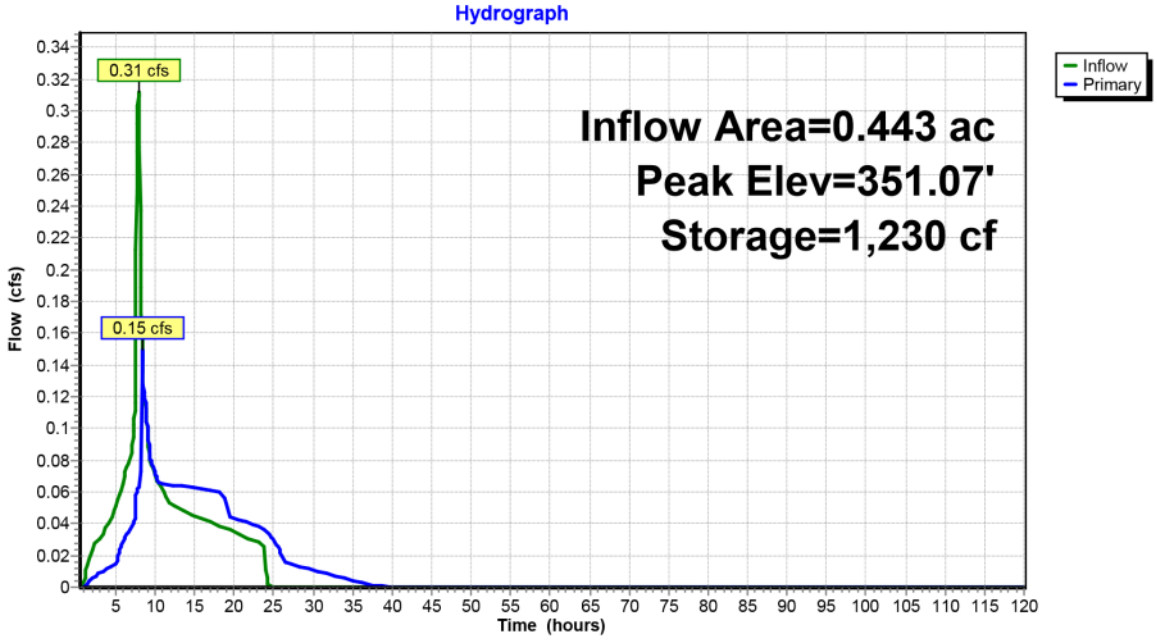
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.40	300	0.0	0	0
348.40	300	40.0	360	360
348.65	300	40.0	30	390
350.15	40	0.1	0	390
350.65	340	100.0	95	485
350.85	400	100.0	74	559
351.15	400	100.0	120	679

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.40	270	0.0	0	0
348.40	270	40.0	324	324
348.65	270	40.0	27	351
350.15	36	0.1	0	351
350.65	306	100.0	86	437
350.85	360	100.0	67	503
351.15	360	100.0	108	611

Device	Routing	Invert	Outlet Devices
#1	Primary	345.40'	**0.7" Vert. Orifice/Grate** C= 0.600
#2	Primary	346.90'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Primary	351.05'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 8.35 hrs HW=351.07' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 11.44 fps)
- **2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 9.79 fps)
- **3=Overflow** (Weir Controls 0.06 cfs @ 0.46 fps)

Pond P1: GSI-1


Hydrograph
Inflow Area=0.443 ac
Peak Elev=351.07'
Storage=1,230 cf
0.31 cfs
0.15 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond P2: GSI 2

Inflow Area = 0.218 ac, 95.04% Impervious, Inflow Depth = 2.89" for Salem 10 YR event
Inflow = 0.16 cfs @ 7.90 hrs, Volume= 0.052 af
Outflow = 0.04 cfs @ 9.20 hrs, Volume= 0.052 af, Atten= 72%, Lag= 77.8 min
Primary = 0.04 cfs @ 9.20 hrs, Volume= 0.052 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 351.34' @ 9.20 hrs Surf.Area= 360 sf Storage= 572 cf

Plug-Flow detention time= 170.7 min calculated for 0.052 af (100% of inflow)
Center-of-Mass det. time= 170.5 min (840.7 - 670.2)

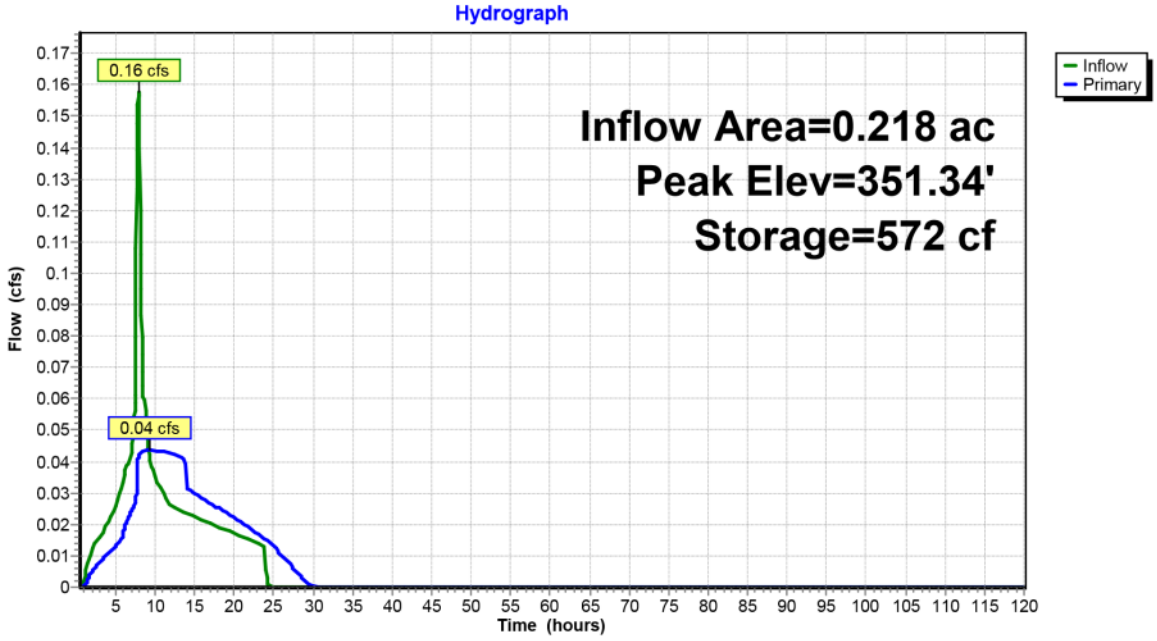
Volume	Invert	Avail.Storage	Storage Description
#1	345.70'	611 cf	**90' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.70	270	0.0	0	0
348.70	270	40.0	324	324
348.95	270	40.0	27	351
350.45	36	0.1	0	351
350.95	306	100.0	86	437
351.15	360	100.0	67	503
351.45	360	100.0	108	611

Device	Routing	Invert	Outlet Devices
#1	Primary	345.70'	**0.7" Vert. Orifice/Grate** C= 0.600
#2	Primary	347.20'	**0.5" Vert. Orifice/Grate** C= 0.600
#3	Primary	351.35'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 9.20 hrs HW=351.34' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 11.41 fps)
- **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.77 fps)
- **3=Overflow** (Controls 0.00 cfs)

Pond P2: GSI 2


Hydrograph
Inflow Area=0.218 ac
Peak Elev=351.34'
Storage=572 cf
0.16 cfs
0.04 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.11 0.12 0.13 0.14 0.15 0.16 0.17
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond P4: GSI 4

Inflow Area = 0.120 ac, 92.32% Impervious, Inflow Depth = 2.85" for Salem 10 YR event
Inflow = 0.09 cfs @ 7.90 hrs, Volume= 0.028 af
Outflow = 0.09 cfs @ 7.97 hrs, Volume= 0.028 af, Atten= 0%, Lag= 4.3 min
Primary = 0.09 cfs @ 7.97 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 349.51' @ 7.95 hrs Surf.Area= 103 sf Storage= 147 cf

Plug-Flow detention time= 72.6 min calculated for 0.028 af (100% of inflow)
Center-of-Mass det. time= 72.7 min (745.0 - 672.3)

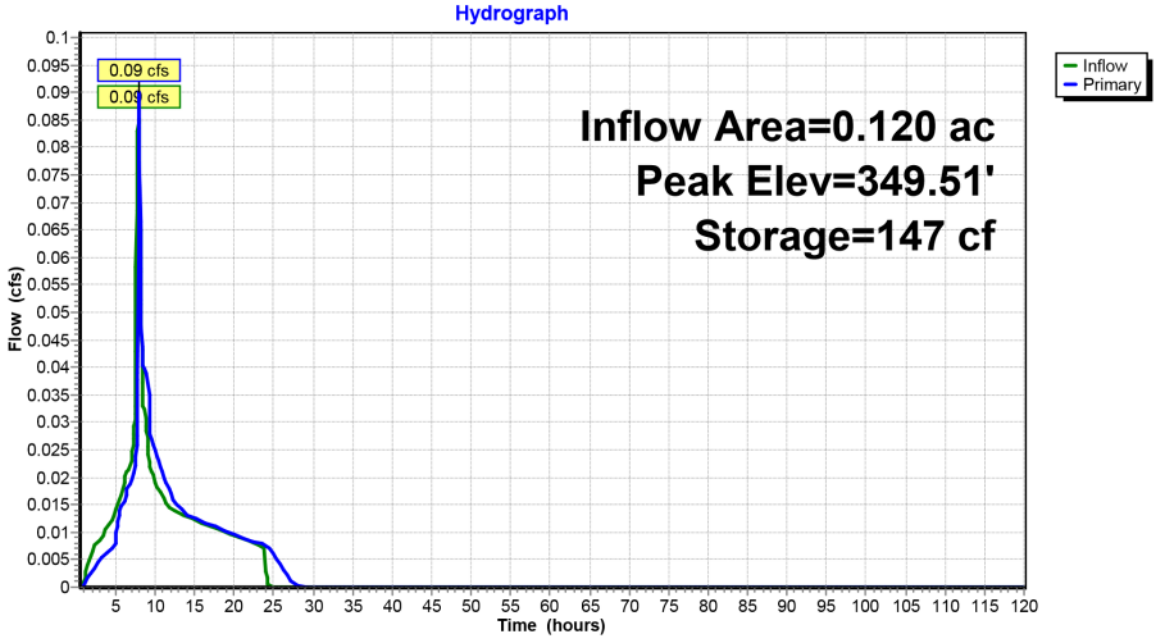
Volume	Invert	Avail.Storage	Storage Description
#1	344.25'	204 cf	**30' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.25	90	0.0	0	0
347.25	90	40.0	108	108
347.50	90	40.0	9	117
349.00	12	0.1	0	117
349.50	102	100.0	29	146
349.70	120	100.0	22	168
350.00	120	100.0	36	204

Device	Routing	Invert	Outlet Devices
#1	Primary	344.25'	**0.5" Vert. Orifice/Grate** C= 0.600
#2	Primary	345.75'	**0.7" Vert. Orifice/Grate** C= 0.600
#3	Primary	349.50'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 7.97 hrs HW=349.51' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 11.02 fps)
- **2=Orifice/Grate** (Orifice Controls 0.02 cfs @ 9.30 fps)
- **3=Overflow** (Weir Controls 0.02 cfs @ 0.34 fps)

Pond P4: GSI 4


Hydrograph
Inflow Area=0.120 ac
Peak Elev=349.51'
Storage=147 cf
0.09 cfs
0.09 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0.1
0.095
0.09
0.085
0.08
0.075
0.07
0.065
0.06
0.055
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond P5: GSI - 5

Inflow Area = 0.294 ac, 90.47% Impervious, Inflow Depth = 2.82" for Salem 10 YR event
Inflow = 0.21 cfs @ 7.90 hrs, Volume= 0.069 af
Outflow = 0.14 cfs @ 8.21 hrs, Volume= 0.069 af, Atten= 34%, Lag= 18.3 min
Primary = 0.14 cfs @ 8.21 hrs, Volume= 0.069 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 349.68' @ 8.21 hrs Surf.Area= 300 sf Storage= 483 cf

Plug-Flow detention time= 92.6 min calculated for 0.069 af (100% of inflow)
Center-of-Mass det. time= 92.7 min (766.5 - 673.8)

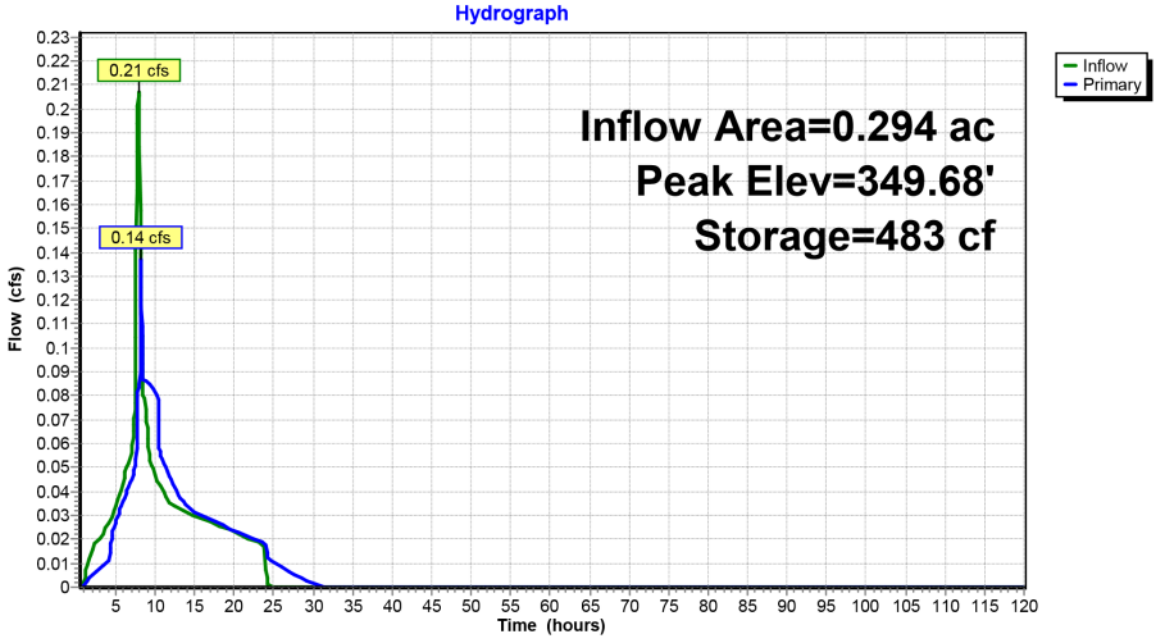
Volume	Invert	Avail.Storage	Storage Description
#1	344.02'	509 cf	**75' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.02	225	0.0	0	0
347.02	225	40.0	270	270
347.27	225	40.0	23	293
348.77	30	0.1	0	293
349.27	255	100.0	71	364
349.47	300	100.0	56	419
349.77	300	100.0	90	509

Device	Routing	Invert	Outlet Devices
#1	Primary	344.02'	**0.6" Vert. Orifice/Grate** C= 0.600
#2	Primary	345.52'	**1.1" Vert. Orifice/Grate** C= 0.600
#3	Primary	349.67'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.11 cfs @ 8.21 hrs HW=349.68' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 11.43 fps)
- **2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 9.77 fps)
- **3=Overflow** (Weir Controls 0.02 cfs @ 0.34 fps)

Pond P5: GSI - 5

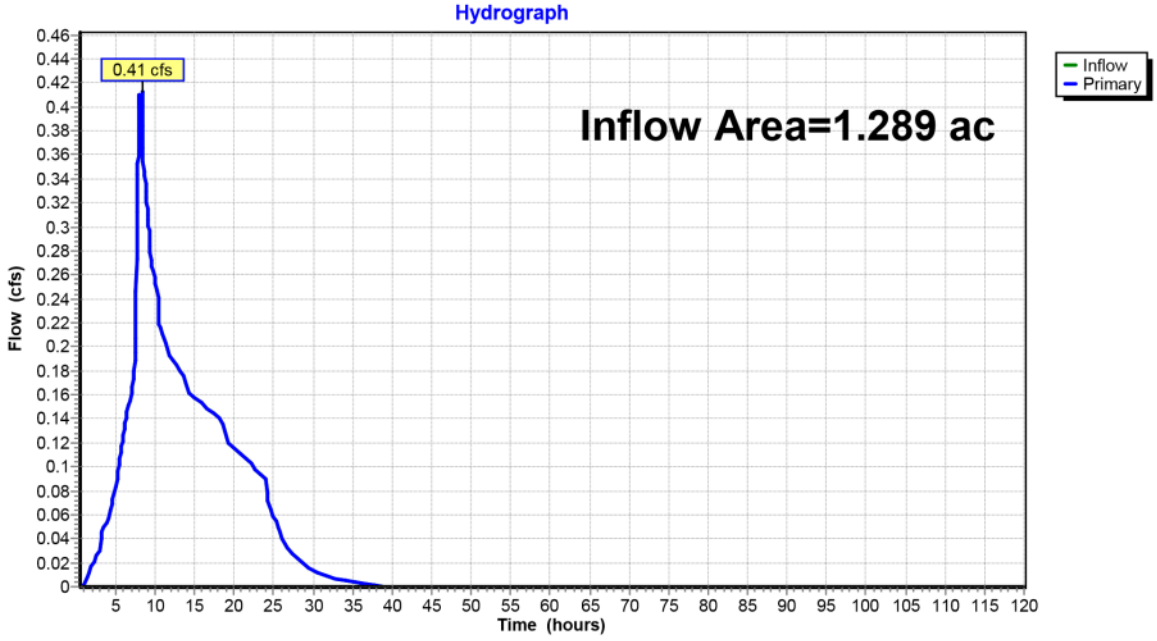

Hydrograph
Inflow Area=0.294 ac
Peak Elev=349.68'
Storage=483 cf
0.21 cfs
0.14 cfs
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Link L2: Developed Release

Inflow Area = 1.289 ac, 88.83% Impervious, Inflow Depth = 2.78" for Salem 10 YR event
Inflow = 0.41 cfs @ 8.31 hrs, Volume= 0.298 af
Primary = 0.41 cfs @ 8.31 hrs, Volume= 0.298 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

Link L2: Developed Release



Summary for Pond P1: GSI-1

Inflow Area = 0.443 ac, 90.56% Impervious, Inflow Depth = 3.21" for Salem 25 YR event
Inflow = 0.35 cfs @ 7.90 hrs, Volume= 0.118 af
Outflow = 0.29 cfs @ 8.10 hrs, Volume= 0.118 af, Atten= 18%, Lag= 11.6 min
Primary = 0.29 cfs @ 8.10 hrs, Volume= 0.118 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 351.10' @ 8.10 hrs Surf.Area= 760 sf Storage= 1,251 cf

Plug-Flow detention time= 247.8 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time= 248.2 min (918.8 - 670.7)

Volume	Invert	Avail.Storage	Storage Description
#1	345.40'	679 cf	**100' Planter (Prismatic)** Listed below (Recalc)
#2	345.40'	611 cf	**90' Planter (Prismatic)** Listed below (Recalc)
		1,291 cf	Total Available Storage

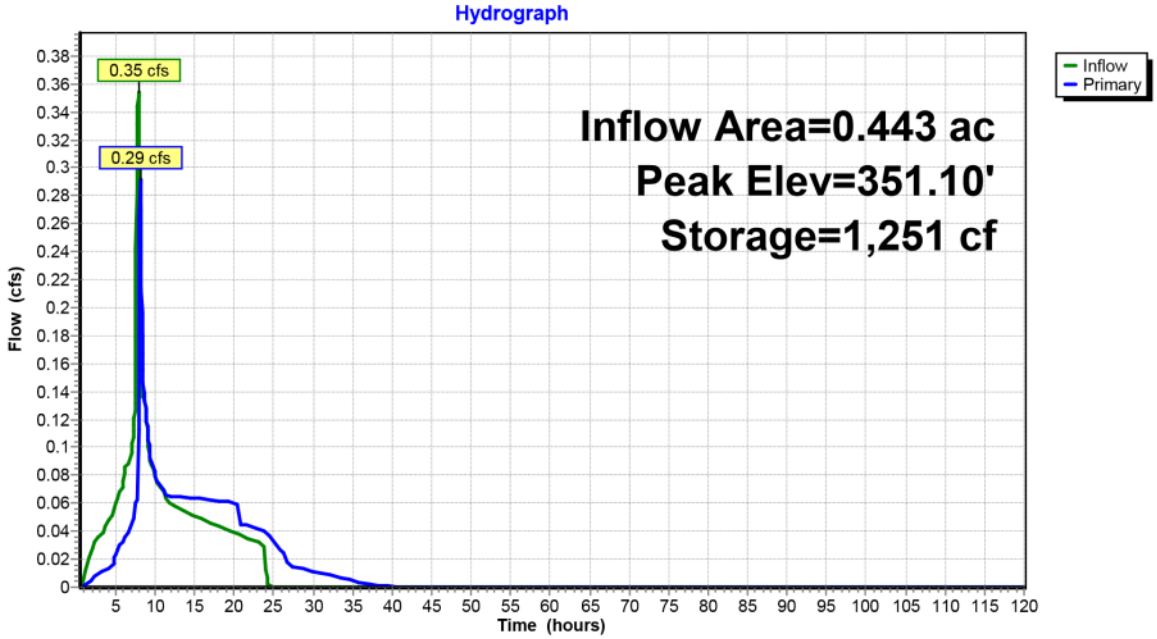
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.40	300	0.0	0	0
348.40	300	40.0	360	360
348.65	300	40.0	30	390
350.15	40	0.1	0	390
350.65	340	100.0	95	485
350.85	400	100.0	74	559
351.15	400	100.0	120	679

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.40	270	0.0	0	0
348.40	270	40.0	324	324
348.65	270	40.0	27	351
350.15	36	0.1	0	351
350.65	306	100.0	86	437
350.85	360	100.0	67	503
351.15	360	100.0	108	611

Device	Routing	Invert	Outlet Devices
#1	Primary	345.40'	**0.7" Vert. Orifice/Grate** C= 0.600
#2	Primary	346.90'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Primary	351.05'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.28 cfs @ 8.10 hrs HW=351.10' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 11.46 fps)
- **2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 9.83 fps)
- **3=Overflow** (Weir Controls 0.22 cfs @ 0.72 fps)

Pond P1: GSI-1


Hydrograph
Inflow
Primary
0.35 cfs
0.29 cfs
Inflow Area=0.443 ac
Peak Elev=351.10'
Storage=1,251 cf
Flow (cfs)
Time (hours)

Summary for Pond P2: GSI 2

Inflow Area = 0.218 ac, 95.04% Impervious, Inflow Depth = 3.28" for Salem 25 YR event
Inflow = 0.18 cfs @ 7.90 hrs, Volume= 0.060 af
Outflow = 0.11 cfs @ 8.21 hrs, Volume= 0.060 af, Atten= 36%, Lag= 18.5 min
Primary = 0.11 cfs @ 8.21 hrs, Volume= 0.060 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 351.37' @ 8.21 hrs Surf.Area= 360 sf Storage= 581 cf

Plug-Flow detention time= 167.3 min calculated for 0.060 af (100% of inflow)
Center-of-Mass det. time= 167.1 min (834.2 - 667.1)

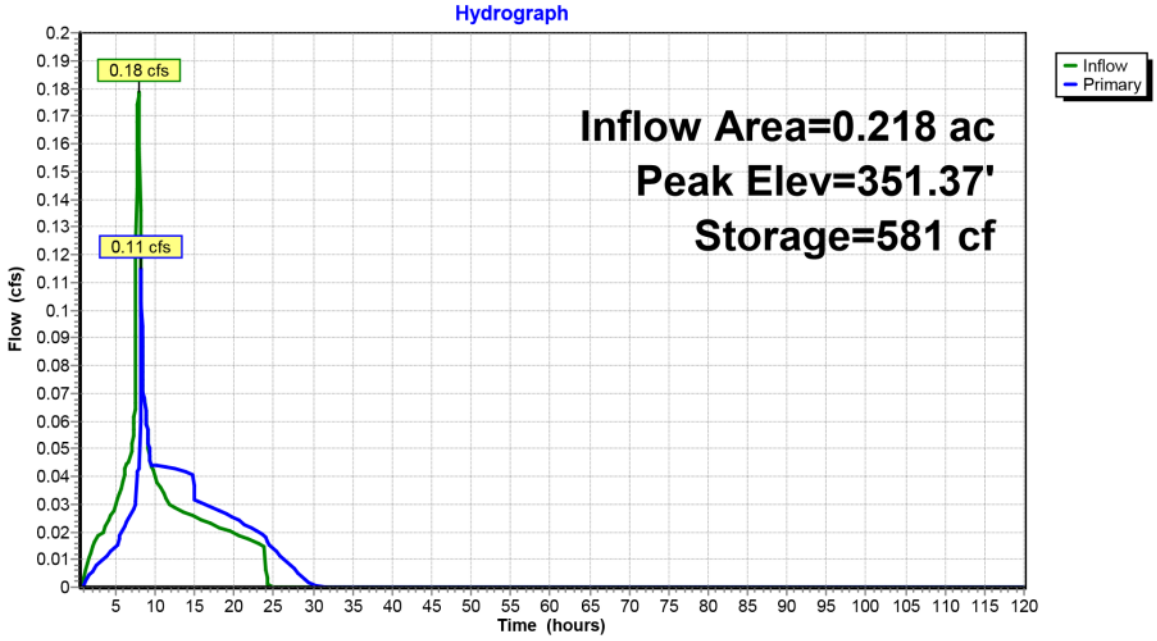
Volume	Invert	Avail.Storage	Storage Description
#1	345.70'	611 cf	**90' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.70	270	0.0	0	0
348.70	270	40.0	324	324
348.95	270	40.0	27	351
350.45	36	0.1	0	351
350.95	306	100.0	86	437
351.15	360	100.0	67	503
351.45	360	100.0	108	611

Device	Routing	Invert	Outlet Devices
#1	Primary	345.70'	**0.7" Vert. Orifice/Grate** C= 0.600
#2	Primary	347.20'	**0.5" Vert. Orifice/Grate** C= 0.600
#3	Primary	351.35'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.09 cfs @ 8.21 hrs HW=351.37' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 11.43 fps)
- **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 9.80 fps)
- **3=Overflow** (Weir Controls 0.04 cfs @ 0.42 fps)

Pond P2: GSI 2


Hydrograph
Inflow Area=0.218 ac
Peak Elev=351.37'
Storage=581 cf
0.18 cfs
0.11 cfs
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Pond P4: GSI 4

Inflow Area = 0.120 ac, 92.32% Impervious, Inflow Depth = 3.24" for Salem 25 YR event
Inflow = 0.10 cfs @ 7.90 hrs, Volume= 0.032 af
Outflow = 0.10 cfs @ 7.85 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 7.85 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 349.51' @ 7.85 hrs Surf.Area= 103 sf Storage= 147 cf

Plug-Flow detention time= 68.3 min calculated for 0.032 af (100% of inflow)
Center-of-Mass det. time= 68.4 min (737.7 - 669.3)

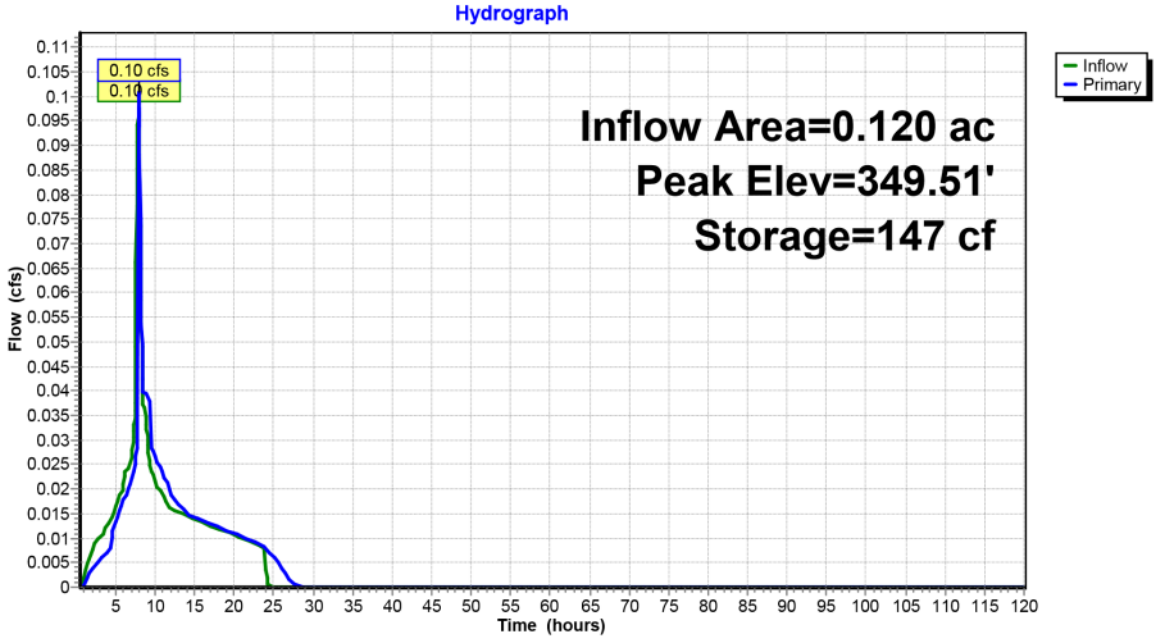
Volume	Invert	Avail.Storage	Storage Description
#1	344.25'	204 cf	**30' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.25	90	0.0	0	0
347.25	90	40.0	108	108
347.50	90	40.0	9	117
349.00	12	0.1	0	117
349.50	102	100.0	29	146
349.70	120	100.0	22	168
350.00	120	100.0	36	204

Device	Routing	Invert	Outlet Devices
#1	Primary	344.25'	**0.5" Vert. Orifice/Grate** C= 0.600
#2	Primary	345.75'	**0.7" Vert. Orifice/Grate** C= 0.600
#3	Primary	349.50'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 7.85 hrs HW=349.51' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 11.03 fps)
- **2=Orifice/Grate** (Orifice Controls 0.02 cfs @ 9.31 fps)
- **3=Overflow** (Weir Controls 0.04 cfs @ 0.40 fps)

Pond P4: GSI 4


Hydrograph
0.10 cfs
0.10 cfs
Inflow Area=0.120 ac
Peak Elev=349.51'
Storage=147 cf
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Pond P5: GSI - 5

Inflow Area = 0.294 ac, 90.47% Impervious, Inflow Depth = 3.21" for Salem 25 YR event
Inflow = 0.23 cfs @ 7.90 hrs, Volume= 0.079 af
Outflow = 0.22 cfs @ 8.04 hrs, Volume= 0.079 af, Atten= 6%, Lag= 8.5 min
Primary = 0.22 cfs @ 8.04 hrs, Volume= 0.079 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 349.70' @ 8.04 hrs Surf.Area= 300 sf Storage= 489 cf

Plug-Flow detention time= 87.5 min calculated for 0.079 af (100% of inflow)
Center-of-Mass det. time= 87.7 min (758.4 - 670.8)

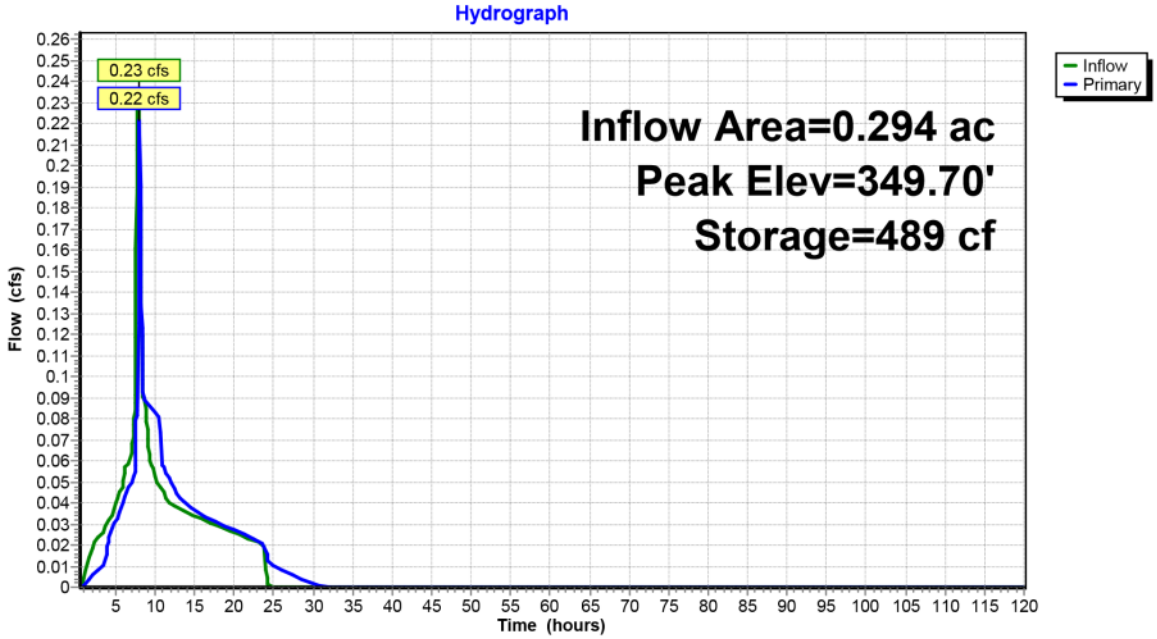
Volume	Invert	Avail.Storage	Storage Description
#1	344.02'	509 cf	**75' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.02	225	0.0	0	0
347.02	225	40.0	270	270
347.27	225	40.0	23	293
348.77	30	0.1	0	293
349.27	255	100.0	71	364
349.47	300	100.0	56	419
349.77	300	100.0	90	509

Device	Routing	Invert	Outlet Devices
#1	Primary	344.02'	**0.6" Vert. Orifice/Grate** C= 0.600
#2	Primary	345.52'	**1.1" Vert. Orifice/Grate** C= 0.600
#3	Primary	349.67'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.20 cfs @ 8.04 hrs HW=349.70' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 11.45 fps)
- **2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 9.79 fps)
- **3=Overflow** (Weir Controls 0.11 cfs @ 0.58 fps)

Pond P5: GSI - 5

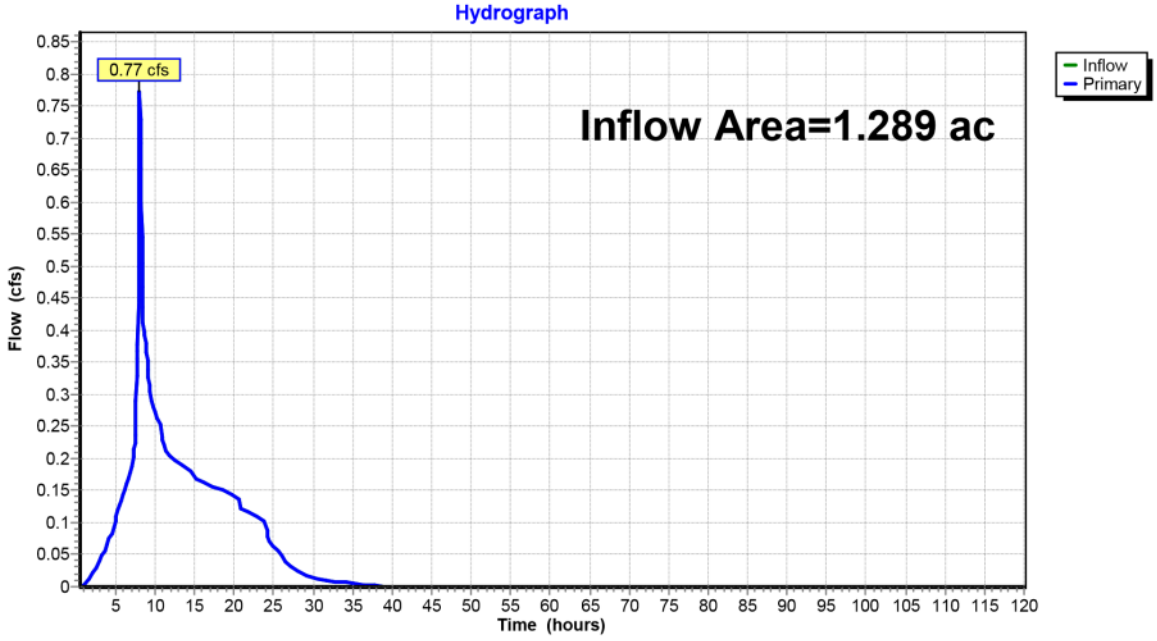

Hydrograph
0.23 cfs
0.22 cfs
Inflow Area=0.294 ac
Peak Elev=349.70'
Storage=489 cf
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Link L2: Developed Release

Inflow Area = 1.289 ac, 88.83% Impervious, Inflow Depth = 3.17" for Salem 25 YR event
Inflow = 0.77 cfs @ 8.07 hrs, Volume= 0.340 af
Primary = 0.77 cfs @ 8.07 hrs, Volume= 0.340 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

Link L2: Developed Release



Summary for Pond P1: GSI-1

Inflow Area = 0.443 ac, 90.56% Impervious, Inflow Depth = 1.07" for Salem WQ event
Inflow = 0.12 cfs @ 7.92 hrs, Volume= 0.040 af
Outflow = 0.03 cfs @ 9.37 hrs, Volume= 0.040 af, Atten= 74%, Lag= 87.6 min
Primary = 0.03 cfs @ 9.37 hrs, Volume= 0.040 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 347.55' @ 9.37 hrs Surf.Area= 570 sf Storage= 490 cf

Plug-Flow detention time= 277.0 min calculated for 0.040 af (100% of inflow)
Center-of-Mass det. time= 277.3 min (979.7 - 702.4)

Volume	Invert	Avail.Storage	Storage Description
#1	345.40'	679 cf	**100' Planter (Prismatic)** Listed below (Recalc)
#2	345.40'	611 cf	**90' Planter (Prismatic)** Listed below (Recalc)
		1,291 cf	Total Available Storage

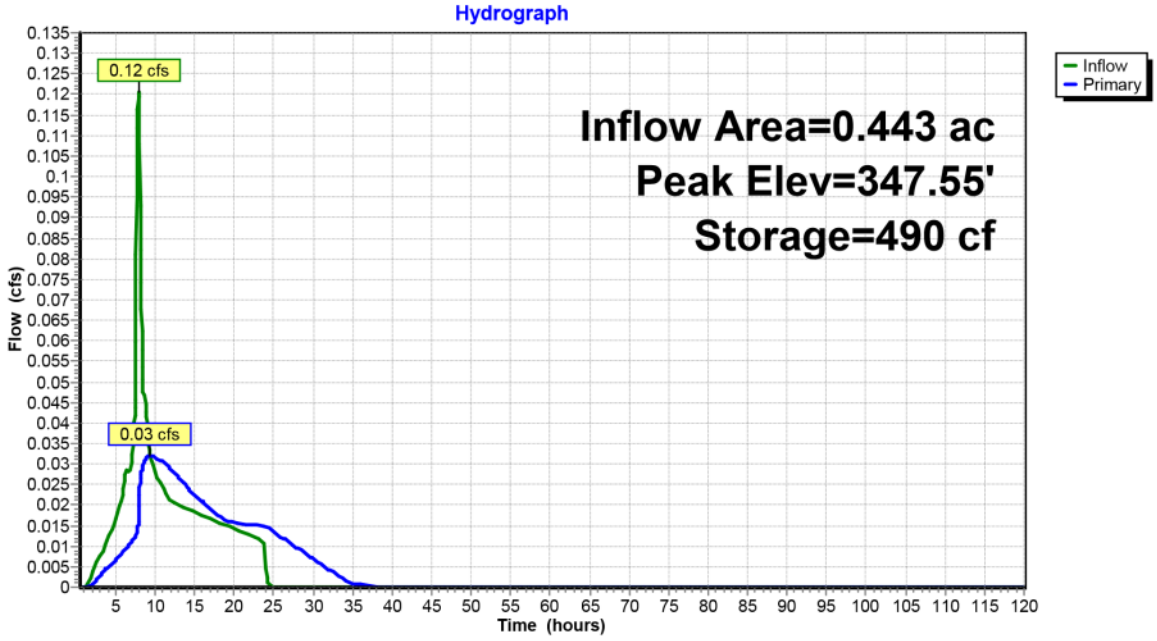
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.40	300	0.0	0	0
348.40	300	40.0	360	360
348.65	300	40.0	30	390
350.15	40	0.1	0	390
350.65	340	100.0	95	485
350.85	400	100.0	74	559
351.15	400	100.0	120	679

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.40	270	0.0	0	0
348.40	270	40.0	324	324
348.65	270	40.0	27	351
350.15	36	0.1	0	351
350.65	306	100.0	86	437
350.85	360	100.0	67	503
351.15	360	100.0	108	611

Device	Routing	Invert	Outlet Devices
#1	Primary	345.40'	**0.7" Vert. Orifice/Grate** C= 0.600
#2	Primary	346.90'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Primary	351.05'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.03 cfs @ 9.37 hrs HW=347.55' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 7.01 fps)
└**2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 3.78 fps)
└**3=Overflow** (Controls 0.00 cfs)

Pond P1: GSI-1


Hydrograph
Inflow Area=0.443 ac
Peak Elev=347.55'
Storage=490 cf
0.12 cfs
0.03 cfs
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Pond P2: GSI 2

Inflow Area = 0.218 ac, 95.04% Impervious, Inflow Depth = 1.12" for Salem WQ event
Inflow = 0.06 cfs @ 7.91 hrs, Volume= 0.020 af
Outflow = 0.02 cfs @ 9.00 hrs, Volume= 0.020 af, Atten= 68%, Lag= 65.4 min
Primary = 0.02 cfs @ 9.00 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 347.45' @ 9.00 hrs Surf.Area= 270 sf Storage= 189 cf

Plug-Flow detention time= 129.5 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 129.6 min (829.4 - 699.9)

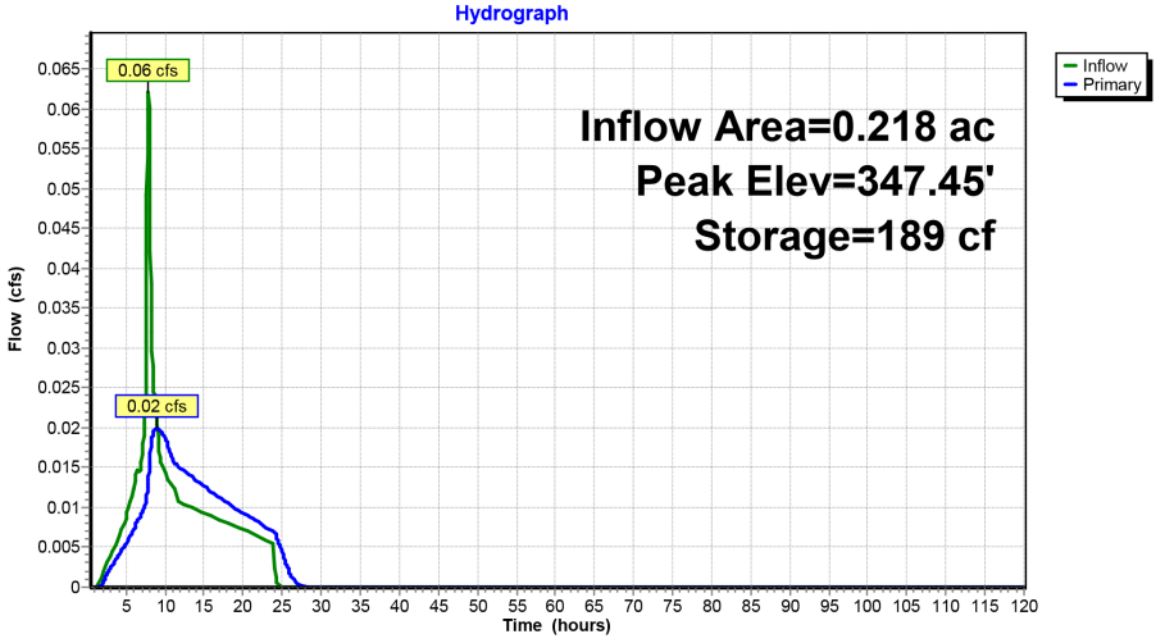
Volume	Invert	Avail.Storage	Storage Description
#1	345.70'	611 cf	**90' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
345.70	270	0.0	0	0
348.70	270	40.0	324	324
348.95	270	40.0	27	351
350.45	36	0.1	0	351
350.95	306	100.0	86	437
351.15	360	100.0	67	503
351.45	360	100.0	108	611

Device	Routing	Invert	Outlet Devices
#1	Primary	345.70'	**0.7" Vert. Orifice/Grate** C= 0.600
#2	Primary	347.20'	**0.5" Vert. Orifice/Grate** C= 0.600
#3	Primary	351.35'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 9.00 hrs HW=347.45' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 6.31 fps)
└**2=Orifice/Grate** (Orifice Controls 0.00 cfs @ 2.29 fps)
└**3=Overflow** (Controls 0.00 cfs)

Pond P2: GSI 2


Hydrograph
Inflow
Primary
0.06 cfs
0.02 cfs
Inflow Area=0.218 ac
Peak Elev=347.45'
Storage=189 cf
Flow (cfs)
Time (hours)
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
0.045
0.05
0.055
0.06
0.065
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond P3: GSI 3-Treat Only

Inflow Area = 0.215 ac, 74.81% Impervious, Inflow Depth = 0.93" for Salem WQ event
Inflow = 0.05 cfs @ 7.93 hrs, Volume= 0.017 af
Outflow = 0.05 cfs @ 7.96 hrs, Volume= 0.015 af, Atten= 0%, Lag= 2.0 min
Primary = 0.05 cfs @ 7.96 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 348.68' @ 7.96 hrs Surf.Area= 240 sf Storage= 74 cf

Plug-Flow detention time= 113.2 min calculated for 0.015 af (91% of inflow)
Center-of-Mass det. time= 51.7 min (764.8 - 713.2)

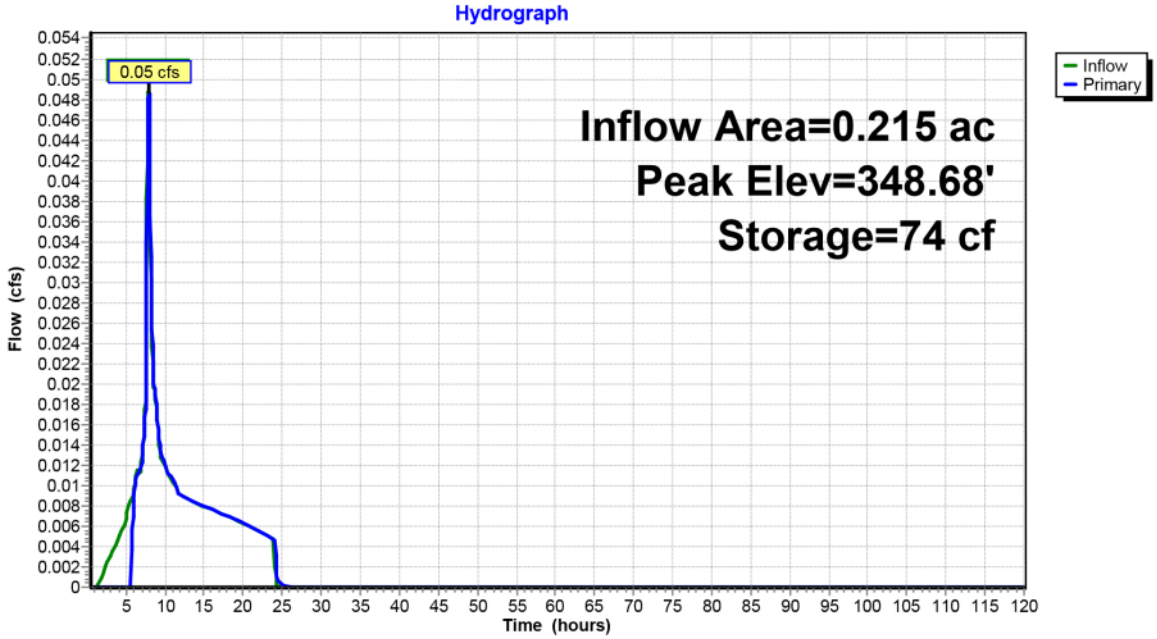
Volume	Invert	Avail.Storage	Storage Description
#1	347.91'	195 cf	**60' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.91	240	0.0	0	0
348.91	240	40.0	96	96
349.16	240	40.0	24	120
350.66	60	0.1	0	120
351.16	240	100.0	75	195

Device	Routing	Invert	Outlet Devices
#1	Primary	348.58'	**12.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	351.16'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 7.96 hrs HW=348.68' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 1.10 fps)
└—**2=Overflow** (Controls 0.00 cfs)

Pond P3: GSI 3-Treat Only



Summary for Pond P4: GSI 4

Inflow Area = 0.120 ac, 92.32% Impervious, Inflow Depth = 1.09" for Salem WQ event
Inflow = 0.03 cfs @ 7.91 hrs, Volume= 0.011 af
Outflow = 0.02 cfs @ 8.26 hrs, Volume= 0.011 af, Atten= 44%, Lag= 20.5 min
Primary = 0.02 cfs @ 8.26 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 346.29' @ 8.26 hrs Surf.Area= 90 sf Storage= 73 cf

Plug-Flow detention time= 77.9 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 77.8 min (779.2 - 701.4)

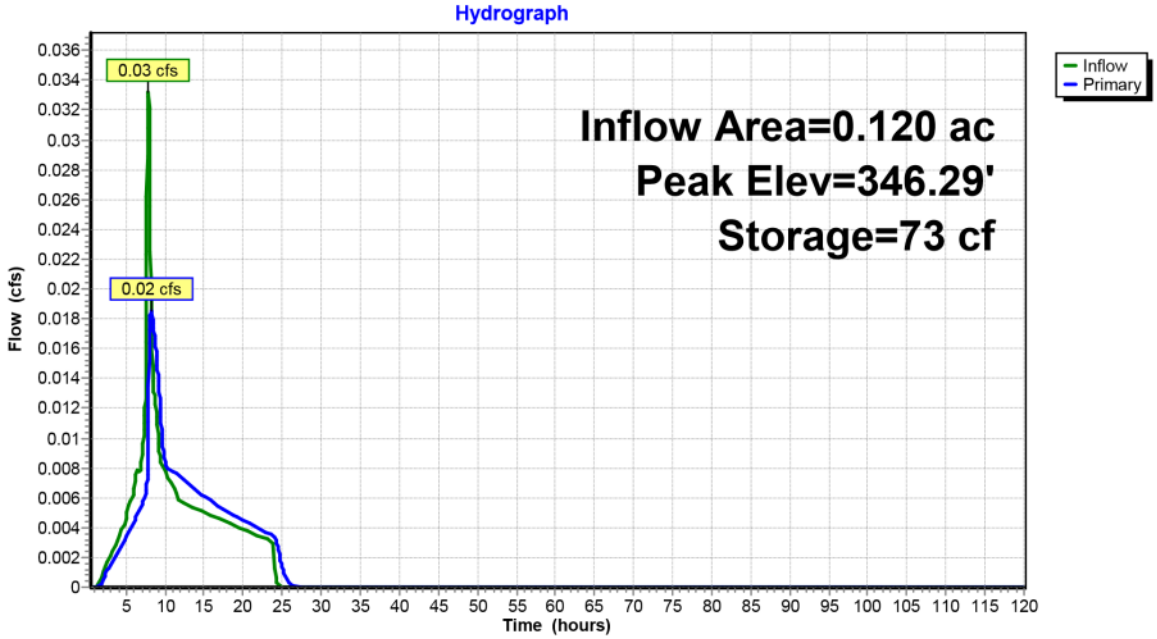
Volume	Invert	Avail.Storage	Storage Description
#1	344.25'	204 cf	**30' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.25	90	0.0	0	0
347.25	90	40.0	108	108
347.50	90	40.0	9	117
349.00	12	0.1	0	117
349.50	102	100.0	29	146
349.70	120	100.0	22	168
350.00	120	100.0	36	204

Device	Routing	Invert	Outlet Devices
#1	Primary	344.25'	**0.5" Vert. Orifice/Grate** C= 0.600
#2	Primary	345.75'	**0.7" Vert. Orifice/Grate** C= 0.600
#3	Primary	349.50'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 8.26 hrs HW=346.29' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 6.84 fps)
- **2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 3.43 fps)
- **3=Overflow** (Controls 0.00 cfs)

Pond P4: GSI 4


Hydrograph
Inflow Area=0.120 ac
Peak Elev=346.29'
Storage=73 cf
0.03 cfs
0.02 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0.036
0.034
0.032
0.03
0.028
0.026
0.024
0.022
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond P5: GSI - 5

Inflow Area = 0.294 ac, 90.47% Impervious, Inflow Depth = 1.07" for Salem WQ event
Inflow = 0.08 cfs @ 7.92 hrs, Volume= 0.026 af
Outflow = 0.04 cfs @ 8.27 hrs, Volume= 0.026 af, Atten= 46%, Lag= 21.4 min
Primary = 0.04 cfs @ 8.27 hrs, Volume= 0.026 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 346.39' @ 8.27 hrs Surf.Area= 225 sf Storage= 214 cf

Plug-Flow detention time= 140.0 min calculated for 0.026 af (100% of inflow)
Center-of-Mass det. time= 140.1 min (842.6 - 702.4)

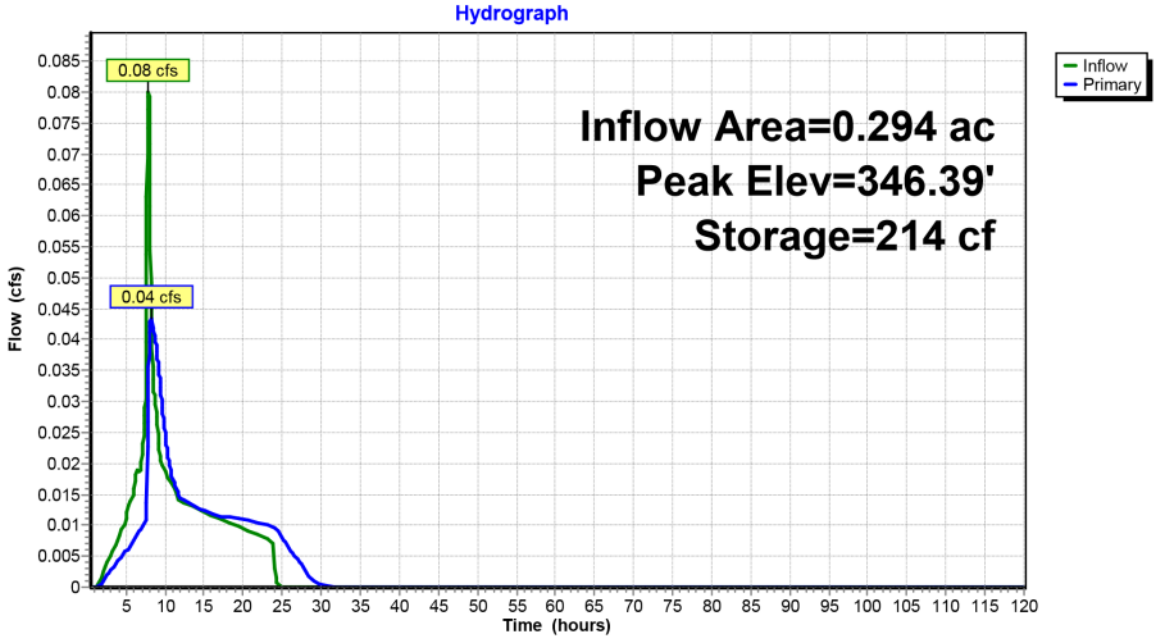
Volume	Invert	Avail.Storage	Storage Description
#1	344.02'	509 cf	**75' Planter (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.02	225	0.0	0	0
347.02	225	40.0	270	270
347.27	225	40.0	23	293
348.77	30	0.1	0	293
349.27	255	100.0	71	364
349.47	300	100.0	56	419
349.77	300	100.0	90	509

Device	Routing	Invert	Outlet Devices
#1	Primary	344.02'	**0.6" Vert. Orifice/Grate** C= 0.600
#2	Primary	345.52'	**1.1" Vert. Orifice/Grate** C= 0.600
#3	Primary	349.67'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 8.27 hrs HW=346.39' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 7.38 fps)
- **2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 4.38 fps)
- **3=Overflow** (Controls 0.00 cfs)

Pond P5: GSI - 5

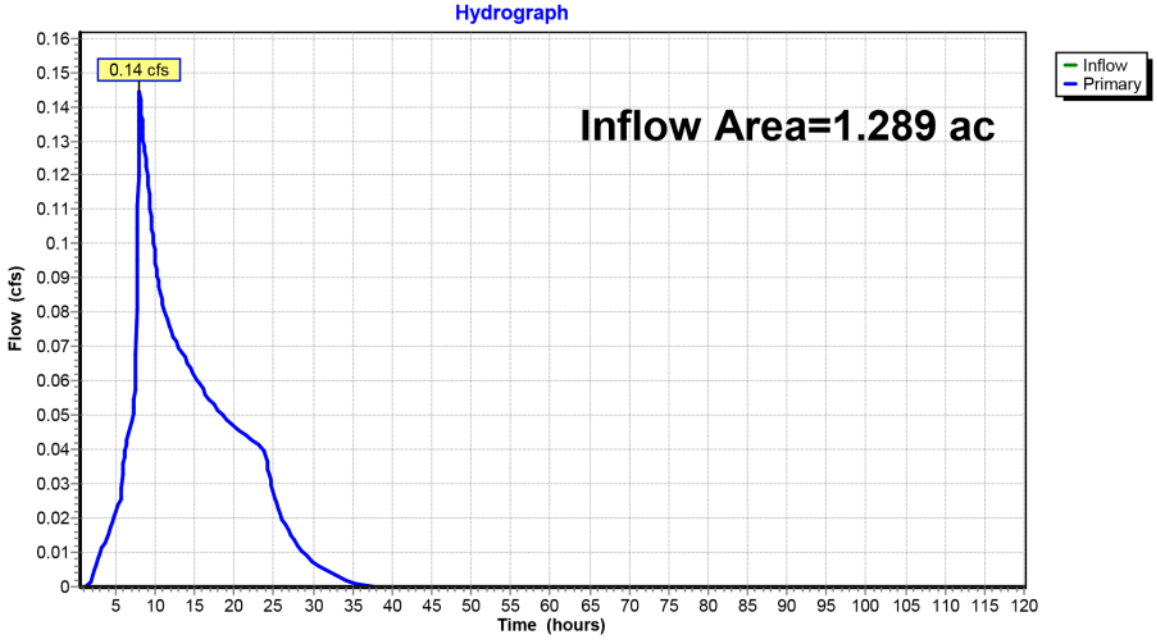

Hydrograph
Inflow Area=0.294 ac
Peak Elev=346.39'
Storage=214 cf
0.08 cfs
0.04 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 0.005 0.01 0.015 0.02 0.025 0.03 0.035 0.04 0.045 0.05 0.055 0.06 0.065 0.07 0.075 0.08 0.085
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Link L2: Developed Release

Inflow Area = 1.289 ac, 88.83% Impervious, Inflow Depth = 1.04" for Salem WQ event
Inflow = 0.14 cfs @ 8.06 hrs, Volume= 0.112 af
Primary = 0.14 cfs @ 8.06 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs

Link L2: Developed Release



PACIFIC HABITAT SERVICES, INC

9450 SW Commerce Circle, Suite 180
Wilsonville, OR 97070

(800) 871-9333 ● (503) 570-0800 ● Fax (503)570-085

November 27, 2018

Aaron Panko, Planner III
Community Development Department
City of Salem
555 Liberty St SE, Room 305
Salem OR 97301

Re: Status of State and Federal Removal/Fill Permits
SPR-DAP18-15/ 2500-2600 Block of Boone Road SE

Dear Aaron:

This letter responds to the November 7, 2018 Appeal of the Decision (SPR-DAP18-15/ 2500-2600 Block of Boone Road SE) from the Law Office of Karl G. Anuta, P.C. It specifically addresses item #5 and the assertion the applicant has not complied with wetland and stormwater requirements. On the contrary, in 2012 and 2013 the applicant received and complied with all state, federal, and local permits in preparing the property for future development. As all work was previously completed, permits were not included in the application. The permits are listed below and are attached for reference:

- US Army Corps of Engineers, NWP 2012-48, Issued November 7, 2012
- Oregon Department of State Lands, 49112-RF, Issued June 18, 2012
- City of Salem Grading Permit, 13-106536-GD, Issued May 9, 2013

The permits authorized the filling of a 0.36-acre low quality wetland and a 420-foot long intermittent stream. The permanent impact to the wetland was mitigated by purchasing 0.36 credits from the Mud Slough Wetland Mitigation Bank. Mitigation for the 420-foot long intermittent stream was through the creation of an approximately 507-foot long meandering channel on the southern portion of the subject property.

The stream and its riparian plantings are currently being monitored by Pacific Habitat Services, with annual monitoring reports being sent to the Corps of Engineers. As the stream and its plantings will not be impacted by the proposed development, no state or federal permits or approvals are needed for the proposed development.

If you have any questions, please feel free to call.

Sincerely,

John van Staveren

John van Staveren, PWS
Project Manager

C: Matt Oyen, PacTrust
Peter Kahn, Costco

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, PORTLAND DISTRICT
PO BOX 2946
PORTLAND OR 97208-2946

REPLY TO
ATTENTION OF:

November 7, 2012

Operations Division
Regulatory Branch
Corps No. NWP-2012-48

Mr. Andrew Jones, Vice President
Pac Trust
15350 SW Sequoia Parkway, Suite 300
Portland, Oregon 97224

Dear Mr. Jones:

Enclosed is your fully executed Department of the Army Permit.

Please carefully read the permit and its conditions. In addition, if you have a contractor and/or agent, please review these conditions with them to ensure that the work is performed in accordance with the permit terms.

Also be aware that other authorizations from Federal, state, or local governments may be required by law. If the work is not completed prior to the permit expiration date, you may apply for a time extension. We recommend you apply for a time extension at least 90 days before the expiration date of the permit.

If you have any questions regarding our evaluation process, please contact me at the letterhead address, by telephone at (503) 808-4383, or e-mail: Karen.L.Nelson@usace.army.mil.

Sincerely,

Karen L. Nelson

Karen L. Nelson
Project Manager
Regulatory Branch

Enclosure

DEPARTMENT OF THE ARMY PERMIT

Permittee: Mr. Andrew Jones, Vice President, Pac Trust

Permit No: NWP-2012-48

Issuing Office: U.S. Army Corps of Engineers

NOTE: The term "you" and its derivatives as used in this permit means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office is acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: You are authorized to discharge 7,100 cubic yards of fill material into 0.36 acres of wetlands, and discharge 14,840 cubic yards of fill material into 420 feet (0.05 acre) of an unnamed intermittent tributary to Pringle Creek. In the south section of the site, excavate and vegetate with native riparian vegetation, a new 507 foot meandering channel along Boone Road SE. Access to the construction site would be from 27th Avenue and from Boone Road SE.

Purpose: To construct a 21-acre retail, service, and office center to serve a local emerging residential area in Salem, Marion County, Oregon.

Project Location: The proposed project is located within wetlands and an unnamed tributary to Pringle Creek, southwest of Kuebler Boulevard and 27th Avenue, Section 12, Township 8 South, Range 3 West, (Latitude 44.8842, Longitude -123.007) in Salem, Marion County, Oregon.

Drawings: Ten (10) drawings/maps (Enclosure 1) are attached.

General Conditions:

1. The time limit for completing the work authorized ends on November 1, 2017. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. Permittee must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition No. 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions (Enclosure 2).

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. Permittee shall notify the Regulatory Branch with the start date when the activities authorized in waters of the U.S. are scheduled to begin. Notification shall be sent by e-mail to cenwp.notify@usace.army.mil or mailed to the following address:

   U.S. Army Corps of Engineers
   CENWP-OD-GC
   Permit Compliance, Marion County
   P.O. Box 2946
   Portland, Oregon 97208-2946

   The subject line of the message shall contain the name of the county in which the project is located followed by the Corps of Engineers permit number.

2. Permittee shall purchase 0.36 credits of palustrine emergent (PEM) type wetlands at the Mud Slough Wetland Mitigation Bank in Rickreall, Oregon. The permittee shall submit proof of this transaction to the U.S. Army Corps of Engineers prior to any discharge of dredged or fill material into a jurisdictional water of the United States.

3. Applicant shall create a 507 foot meandering channel conducive to providing hydrologic conveyance, riparian vegetation and habitat, along the southern border of project site, as shown on Page 9 of 10 in the attached drawings (Enclosure 1). Native, non-invasive riparian vegetation shall be planted in amended soils (added nutrients to help plants thrive), within the first fall of discharging fill material in waters of the U.S. Photo monitoring at designated photo-points shall begin upon completion of planting, include an as-built of project, and be submitted to the Corps, at the above address, at Year 1. Photo monitoring will occur again at Year 3 to ensure vegetation has an 80% success rate, and that non-erosive hydrologic conveyance is established. The last monitoring report is due at Year 5, for a total of three monitoring reports within 5 years. Monitoring reports shall include a summary of hydrologic conveyance, plant success/failure, riparian inhabitants, and photo documentation.

4. Your responsibility to complete construction of the channel as set forth in Special Condition 3 (above) will not be considered fulfilled until you have demonstrated project success and have

received written verification of that success from the U.S. Army Corps of Engineers. If project is not successful by year 5, additional monitoring and work to achieve success shall be required.

5. Fill materials placed at project site shall be clean and free of contaminants.

6. Excavated materials hauled off site shall be placed in a designated area where materials would not enter waters of the United States without Department of the Army authorization.

7. In the event cultural resources and/or historic properties are discovered during any phase of the authorized work, the Permittee shall fully implement the recommendations outlined in the Inadvertent Discovery Plan (Enclosure 3) and contact the Corps immediately. The Confederated Tribes of the Grand Ronde Community of Oregon, Confederate Tribes of the Warm Springs Indians, and the Confederated Tribes of the Siletz, will also be contacted.

8. Permittee shall submit a signed certification regarding the completed work and any required mitigation. A "Compliance Certification" is provided (Enclosure 4).

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this Authorization:

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition No. 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below as permittee indicates that you accept and agree to comply with the terms and conditions of this permit.

PACIFIC REALTY ASSOCIATES, L.P., a Delaware limited partnership
By: PacTrust Realty, Inc., a Delaware corporation, its General Partner

(PERMITTEE SIGNATURE)	(DATE) 11/2/12
(PRINTED NAME) Scott D. Hodson	(TITLE) Vice President

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

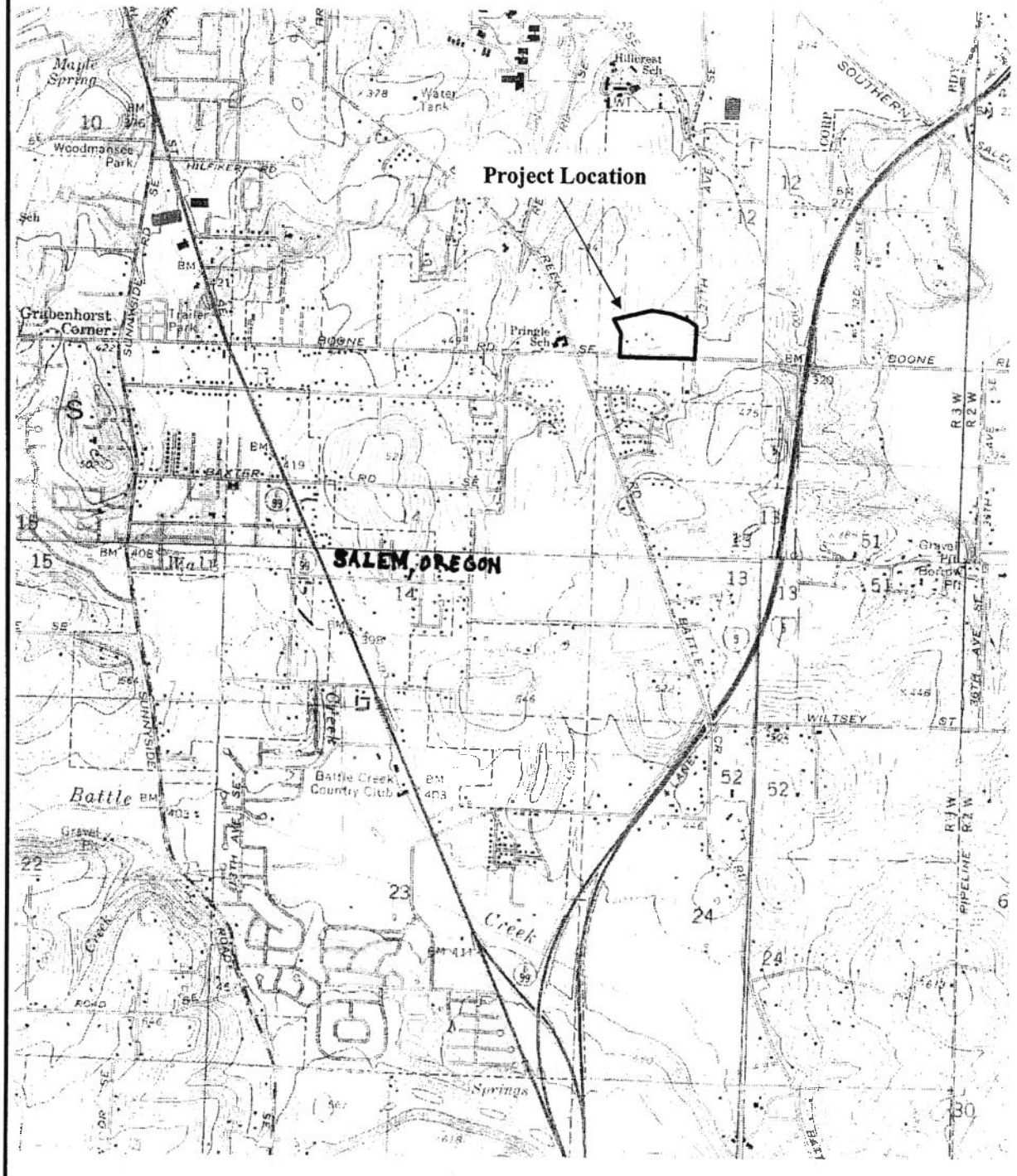
FOR THE COMMANDER, JOHN W. EISENHAUER, P.E. COLONEL, CORPS OF ENGINEERS, DISTRICT COMMANDER:

(DISTRICT COMMANDER)	(DATE) 11/7/12

Michael R. Turaski
Acting Chief, Regulatory Branch

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE)	(DATE)



3/8/11 3349

Location and general topography of the Pac-Trust SE Kuebler Boulevard site, Marion County, Oregon (USGS, Salem East, Salem West, Sidney and Turner quadrangles, 1986).

FIGURE 1

Pacific Habitat Services, Inc.

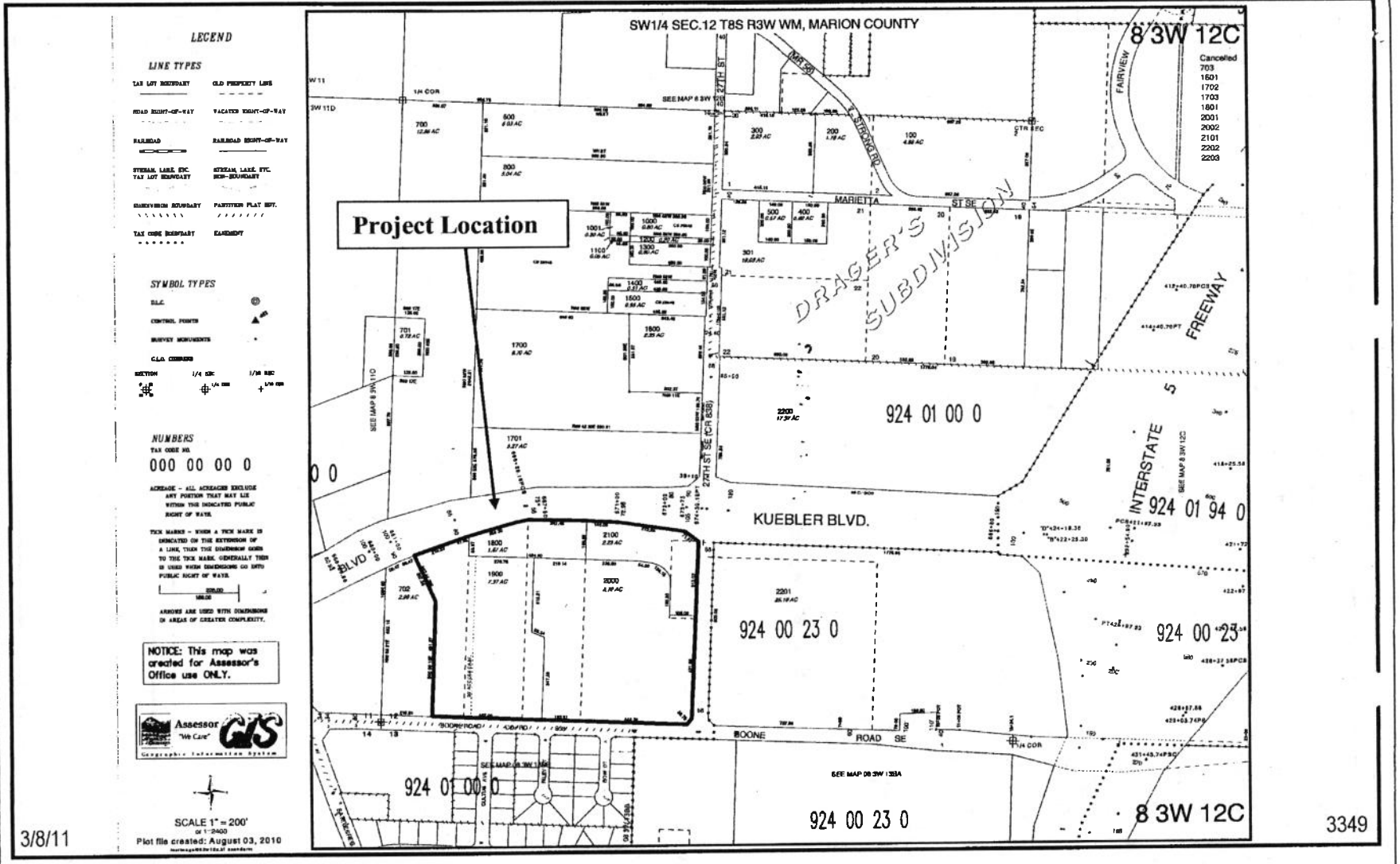
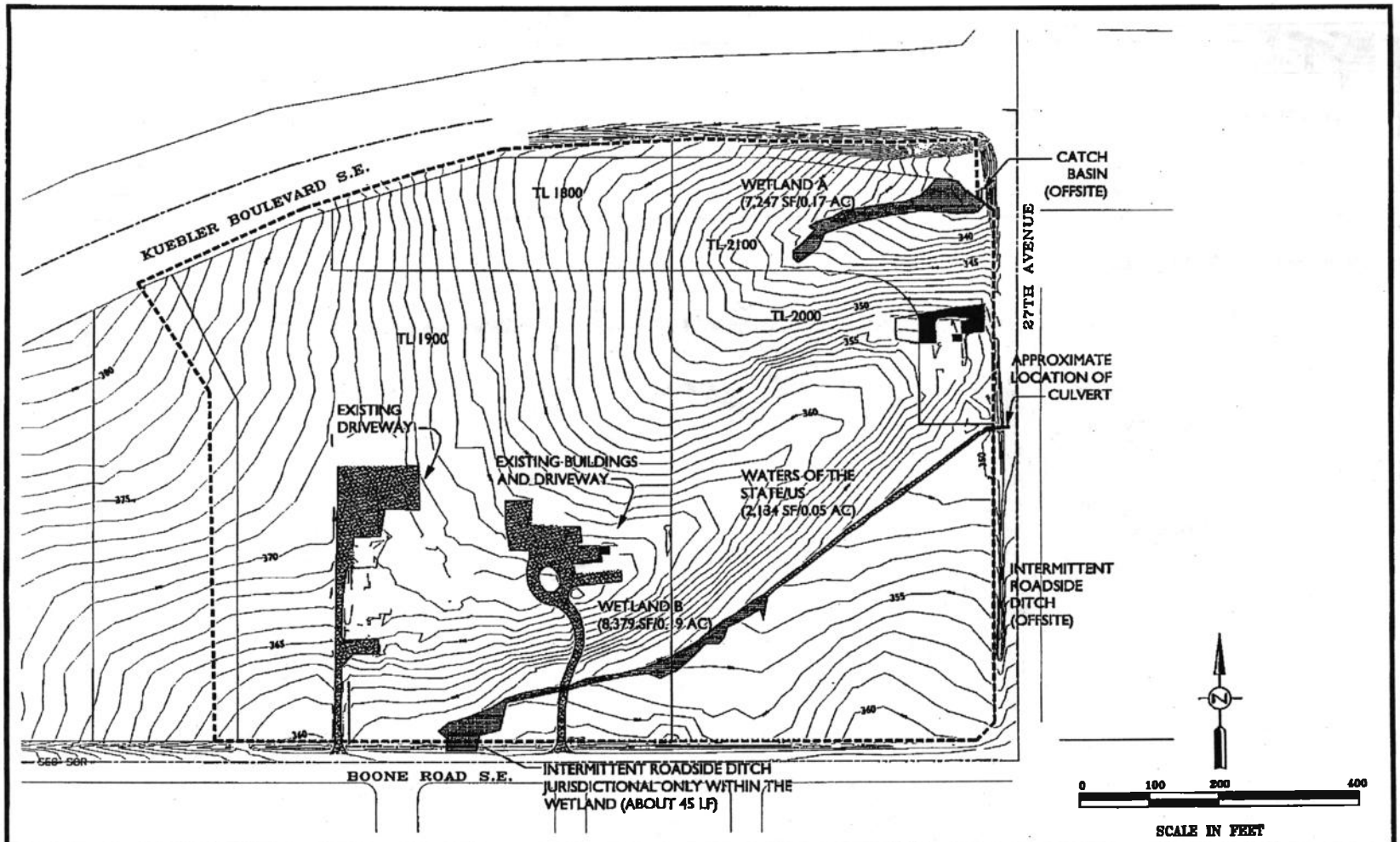


FIGURE 2

Tax lot map for the Pac-Trust SE Kuebler Boulevard site, Marion County, Oregon (ORMAP Tax Map T8S R3W Sec 12C, Tax lots 1800, 1900, 2000, and 2100).

Pacific Habitat Services, Inc.



REVISED
FIGURE
4

Existing conditions for the PacTrust site on Kuebler Blvd. in Salem, Oregon. Survey provided by Weddle Surveying, Inc., 2011.

3349
3/22/12

Pacific Habitat Services, Inc.

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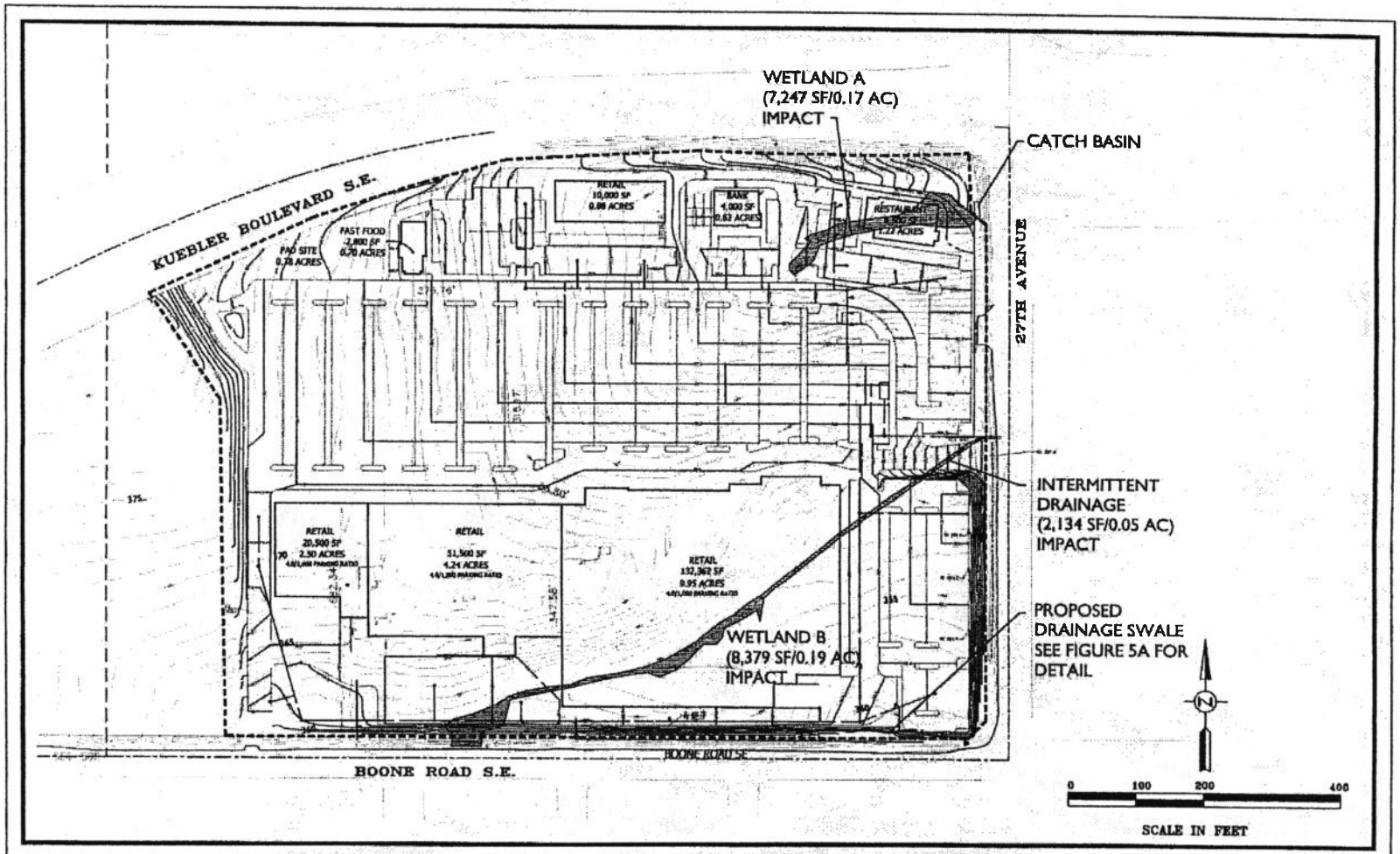

FIGURE 5

Proposed site plan, wetland/drainage impacts and New Drainage Swale, for the PacTrust site on Kuebler Blvd. in Salem, Oregon. Provided by Westech Engineering, Inc., 2011.

3349

Revised 9-13-12

Pacific Habitat Services, Inc.

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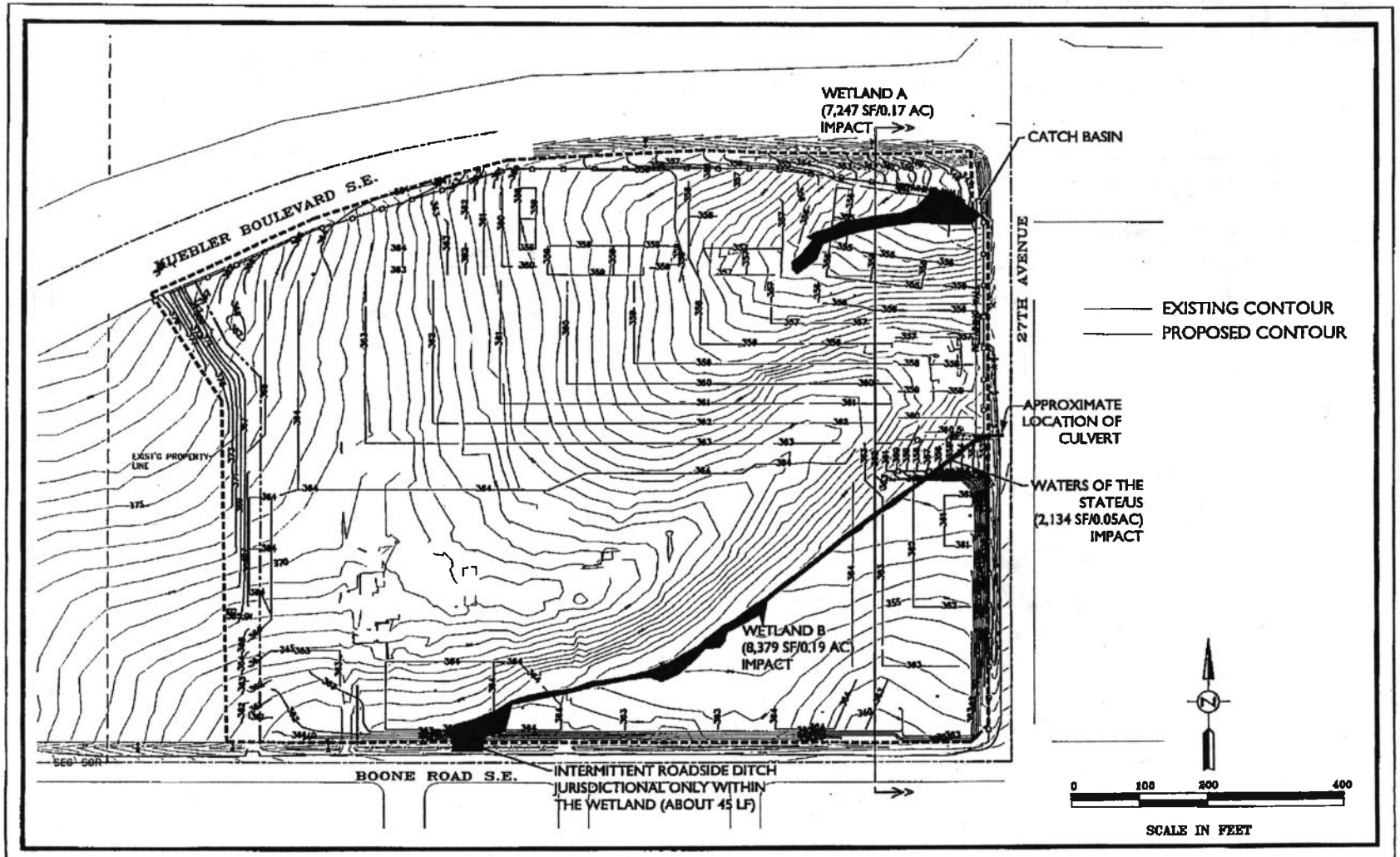

REVISED
FIGURE
5A

Proposed grading, wetland/drainage impacts, and location of cross–section A–A for the PacTrust site on Kuebler Blvd. in Salem, Oregon. Provided by Westech Engineering, Inc., 2011.

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3/22/12

Pacific Habitat Services, Inc.

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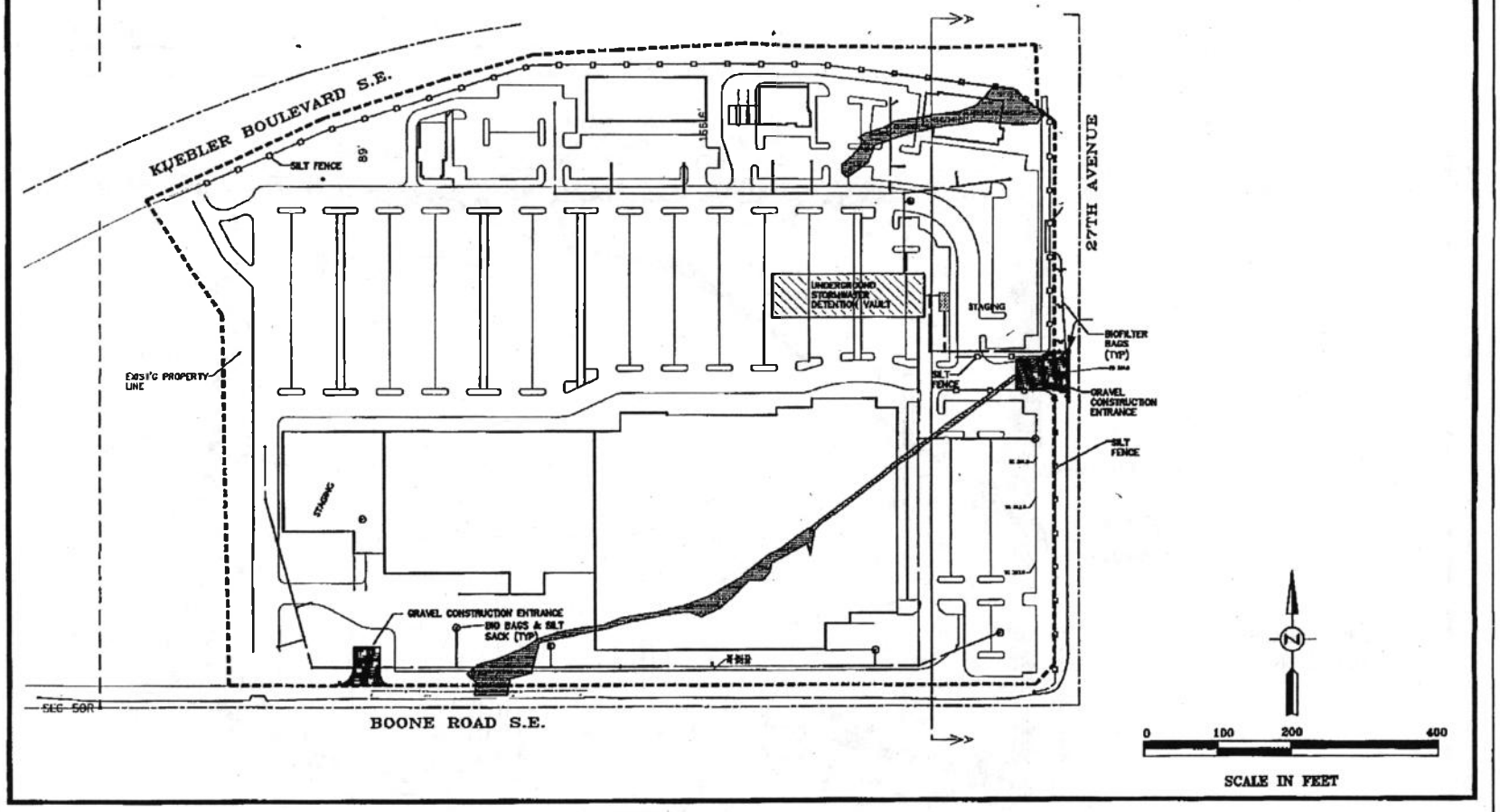

REVISED FIGURE 8

Erosion control plan for the PacTrust site on Kuebler Blvd. in Salem, Oregon. Provided by Westech Engineering, Inc., 2011.

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3/22/12

Pacific Habitat Services, Inc.

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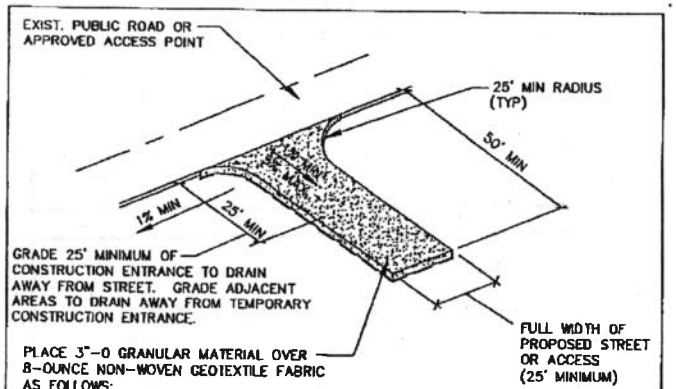


DRY WEATHER ACCESS
14-INCH MIN. DEPTH OVER COMPACTED SUBGRADE & FABRIC

WET WEATHER ACCESS
24-INCH MIN. DEPTH OVER UNDISTURBED SUBGRADE & FABRIC

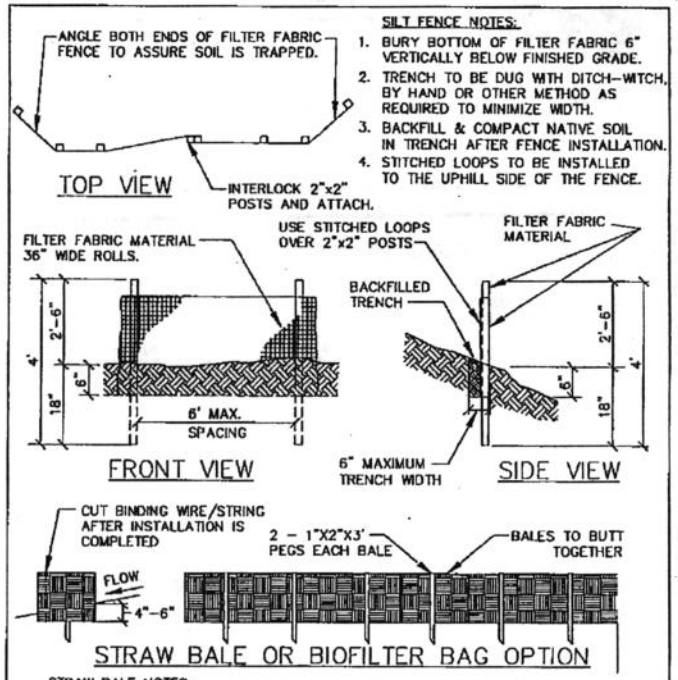
CONSTRUCTION NOTES:

1. THE AREA OF THE CONSTRUCTION ENTRANCE SHALL BE STRIPPED OF ALL TOPSOIL, VEGETATION, ROOTS, AND OTHER NON-COMPACTABLE MATERIAL.
2. SUBGRADE SHALL BE COMPACTED AND PROOFROLLED PRIOR TO PLACEMENT OF GRANULAR MATERIAL. FAILURE TO PASS PROOFROLL WILL REQUIRE USE OF WET WEATHER SECTION.
3. FAILURE OR PUMPING OF THE DRY WEATHER SECTION WILL REQUIRE REMOVAL OF THE GRANULAR MATERIAL AND INSTALLATION OF THE WET WEATHER SECTION.

MAINTENANCE NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 2-INCH STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF STRUCTURES USED TO TRAP SEDIMENT.
2. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
3. ALL TRUCKS TRANSPORTING SATURATED SOILS SHALL BE WELL SEALED. WATER DRIPPAGE FROM TRUCKS MUST BE REDUCED TO 1 GALLON PER HOUR PRIOR TO LEAVING THE SITE.

LAST REVISION DATE: JAN 2000	JOB #: STANDARD
TEMPORARY CONSTRUCTION ENTRANCE (NTS)	
WESTECH ENG.	DETAIL NO. 6100



SILT FENCE NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. TRENCH TO BE DUG WITH DITCH-WITCH, BY HAND OR OTHER METHOD AS REQUIRED TO MINIMIZE WIDTH.
3. BACKFILL & COMPACT NATIVE SOIL IN TRENCH AFTER FENCE INSTALLATION.
4. STITCHED LOOPS TO BE INSTALLED TO THE UPHILL SIDE OF THE FENCE.

STRAW BALE NOTES:

1. EMBED BALES 4"-6" BELOW GROUND SURFACE.
2. DRIVE STAKES MIN. 12" INTO GROUND SURFACE, AND FLUSH W/ TOP OF BALES.

MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP-SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND SEDIMENT FENCES, STRAW BALES OR BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

LAST REVISION DATE: JAN 2000	JOB #: STANDARD
SEDIMENT BARRIERS (NTS)	
WESTECH ENG.	DETAIL NO. 6110

FIGURE 8A

Erosion control plan for the PacTrust site on Kuebler Blvd. in Salem, Oregon. Provided by Westech Engineering, Inc., 2011.

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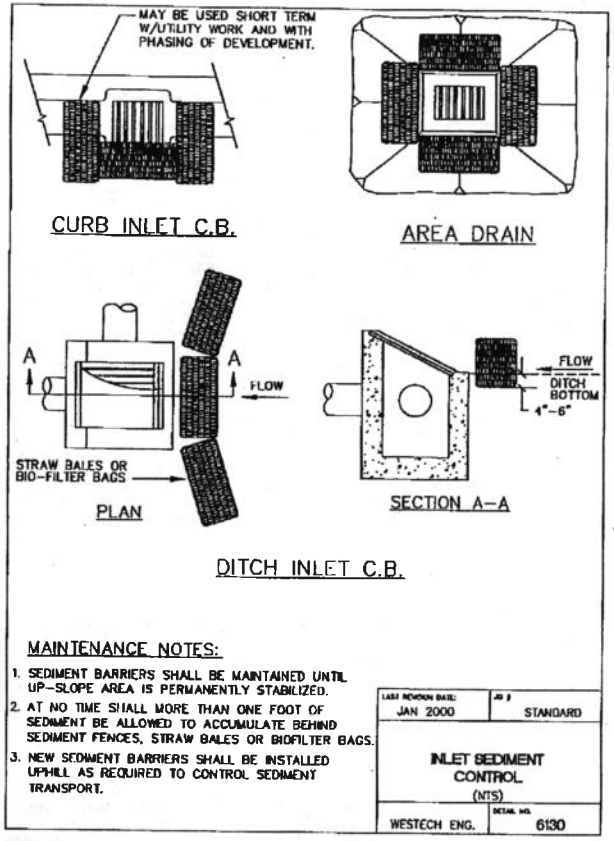
12/7/11

Pacific Habitat Services, Inc.



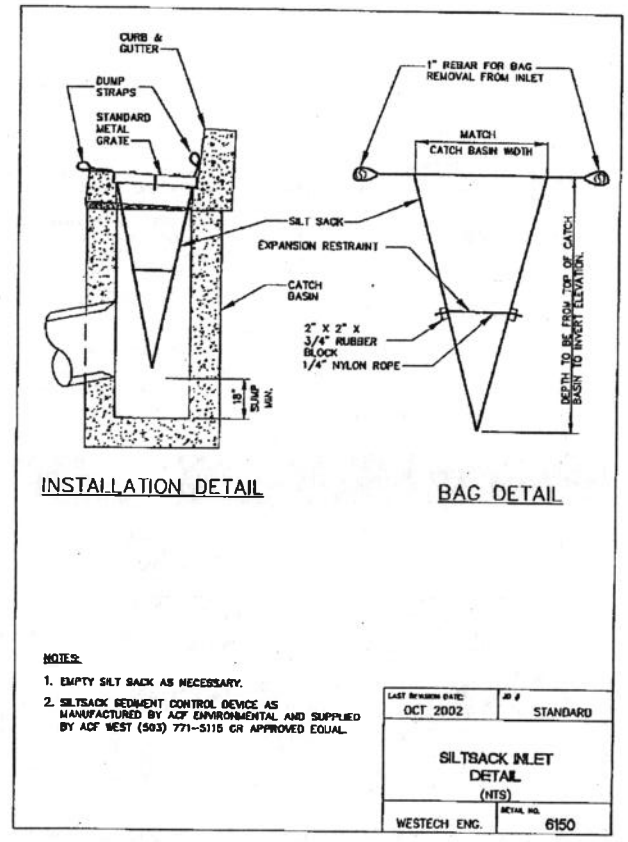


FIGURE 8B

Erosion control details for the PacTrust site on Kuebler Blvd. in Salem, Oregon. Provided by Westech Engineering, Inc., 2011.

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12/7/11

Pacific Habitat Services, Inc.

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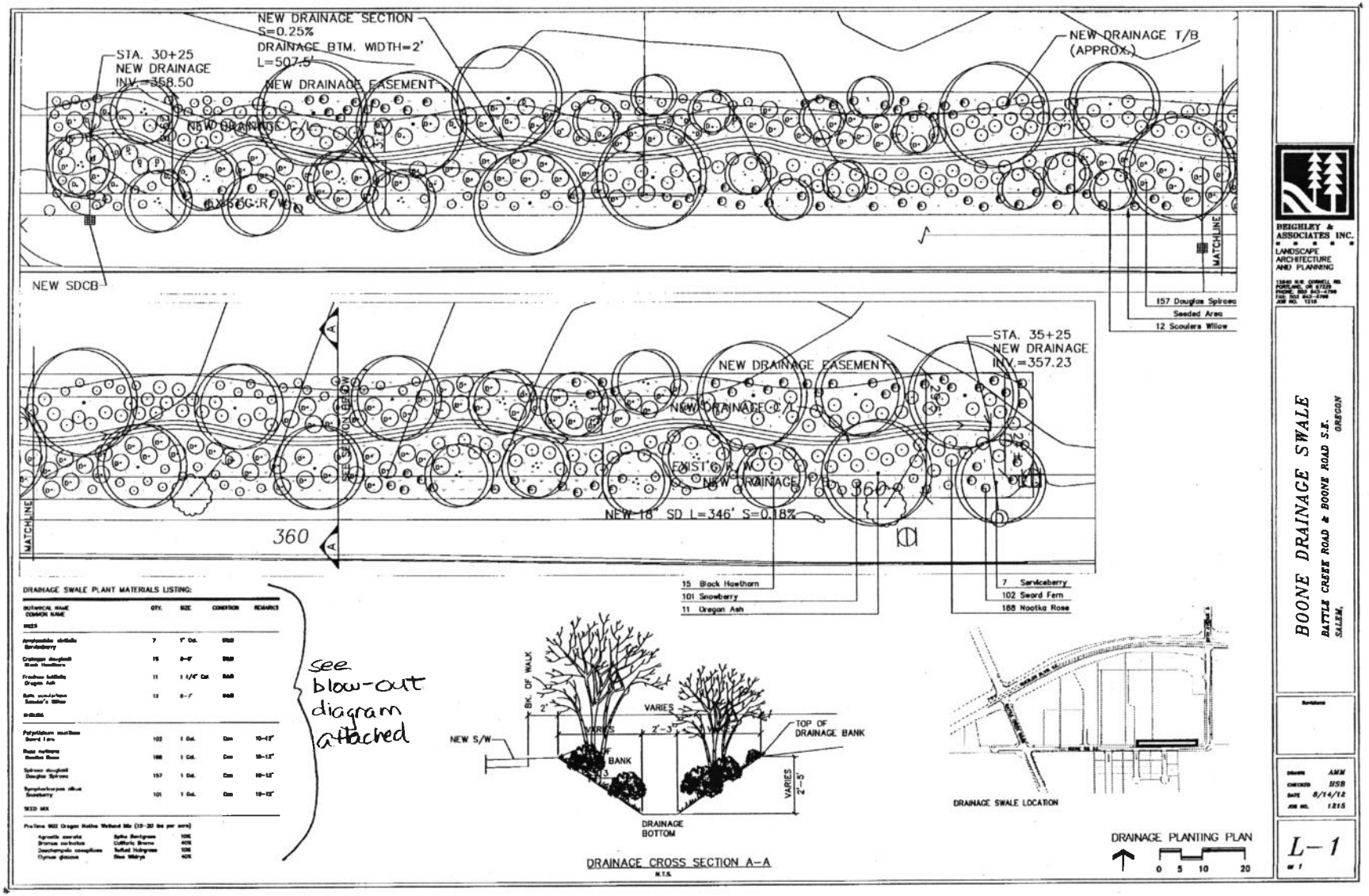
NEW DRAINAGE SECTION
S=0.25%
DRAINAGE BTM. WIDTH=2'
L=507.5'
STA. 30+25
NEW DRAINAGE
INV.=358.50
NEW DRAINAGE EASEMENT
NEW DRAINAGE C/L
NEW DRAINAGE T/B
(APPROX.)
NEW SDCB
MATCHLINE
157 Douglas Spiraea
Seeded Area
12 Scouler's Willow
STA. 35+25
NEW DRAINAGE
INV.=357.23
NEW DRAINAGE EASEMENT
NEW DRAINAGE C/L
EXIST'G R/W
NEW DRAINAGE
NEW 18" SD L=346' S=0.18%
360
15 Black Hawthorn
101 Snowberry
11 Oregon Ash
7 Serviceberry
102 Sword Fern
188 Nootka Rose
DRAINAGE SWALE PLANT MATERIALS LISTING:
see blow-out diagram attached
NEW S/W
BK. OF WALK
TOP OF DRAINAGE BANK
DRAINAGE BOTTOM
DRAINAGE CROSS SECTION A-A
DRAINAGE SWALE LOCATION
DRAINAGE PLANTING PLAN
BEIGHLEY & ASSOCIATES INC.
LANDSCAPE ARCHITECTURE AND PLANNING
BOONE DRAINAGE SWALE
BATTLE CREEK ROAD & BOONE ROAD S.E.
SALEM, OREGON
L-1

PLANT MATERIALS LISTING:

BOTANICAL NAME COMMON NAME	QTY.	SIZE	CONDITION	REMARKS
TREES				
Amelanchier alnifolia Serviceberry	7	1" Cal.	B&B	
Crategus douglasii Black Hawthorn	15	8–9'	B&B	
Fraxinus latifolia Oregon Ash	11	1 1/4" Cal.	B&B	
Salix scouleriana Scouler's Willow	12	6–7'	B&B	
SHRUBS				
Polystichum munitum Sword Fern	102	1 Gal.	Can	10–12"
Rosa nutkana Nootka Rose	188	1 Gal.	Can	10–12"
Spiraea douglasii Douglas Spiraea	157	1 Gal.	Can	10–12"
Symphoricarpos albus Snowberry	101	1 Gal.	Can	10–12"
SEED MIX				

ProTime 902 Oregon Native Wetland Mix (15–20 lbs per acre)

Agrostis exerata	Spike Bentgrass	10%
Bromus carinatus	California Brome	40%
Deschampsia caespitosa	Tufted Hairgrass	10%
Elymus glaucus	Blue Wildrye	40%

Oregon
John A. Kitzhaber, MD, Governor

Department of Environmental Quality
Northwest Region Portland Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987
(503) 229-5263
Fax: (503) 229-6945
TTY: 711

October 8, 2012

Ms. Karen Nelson
U.S. Army Corps of Engineers
ATTN: CENWP-OP-GP
PO Box 2946
Portland, OR 97208-2946

Dear Ms. Nelson:

The Department of Environmental Quality (DEQ) has reviewed the U.S. Army Corps of Engineers Permit application #2012-00048 (Department of State Lands [DSL] #49112-RF), pursuant to request for Clean Water Act Section 401 Water Quality Certification received on July 9, 2012. DEQ's 401 Water Quality Certification public comment opportunity was circulated with the U.S. Army Corps of Engineers public notice and DEQ received no water quality comments.

The applicant, Pac Trust, proposes to impact wetlands and waters to construct a commercial development. The project is located in waters tributary to Pringle Creek, in the city of Salem, in Marion County, Oregon (Section 12, T8S/R3W).

Project Description: Proposed project elements include: construction on an approximate 21-acre site, including associated infrastructure; and installation of stormwater conveyance and treatment facilities.

Approximately 0.36-acres wetlands and 0.05-acres waters will be permanently impacted due to the project. Compensatory mitigation for permanent impacts will be accomplished through purchase of credits from a wetland mitigation bank located within the service area.

Status of Affected Waters of the State: Pringle Creek is a tributary to the Willamette River and both are classified as water quality limited under the federal Clean Water Act and have an Environmental Protection Agency approved Total Maximum Daily Load that has been developed for the parameters of: Bacteria and Temperature. Pringle Creek is listed on Section 303(d) List of impaired water bodies for the parameters of: Copper; Dieldrin; Dissolved Oxygen; Lead and Zinc; and is listed with potential concern for the parameters of: Alkalinity and Heptachlor.

Beneficial uses impaired by the above listed parameters in Pringle Creek include: anadromous fish passage; aquatic life; drinking water; human health; resident fish and aquatic life; salmonid spawning, rearing and migration and water contact recreation.

Certification Decision: Based on the information provided by the applicant and U.S. Army Corps of Engineers, DEQ is reasonably assured that implementation of the project will be consistent with applicable provisions of Sections 301, 302, 303, 306, and 307 of the federal Clean Water Act, state water quality standards set forth in Oregon Administrative Rules Chapter 340 Division 41, and other appropriate requirements of state law, provided the

following conditions are incorporated into the U.S. Army Corps of Engineers permit and strictly adhered to by the applicant.

401 CERTIFICATION CONDITIONS

1) **Duration of Certification:** This 401 WQC is valid until the fifth year after issuance of the USACE permit. A new 401 WQC must be obtained prior to any substantial modification of the U.S. Army Corps of Engineers permit.

2) **Stormwater Management Plan:** A post-construction stormwater management plan has been developed and submitted on behalf of the applicant. The plan describes how Best Management Practices (BMPs) that will be implemented to prevent or treat pollution in stormwater generated by the proposed project, in order to comply with state water quality standards, Total Maximum Daily Load (TMDL) Load Allocations (LAs), Groundwater Management Area concerns or National Pollutant Discharge Elimination System (NPDES) permit requirements.

   The system components include: impervious areas will be captured by catch basins conveyed through an underground detention vault and approved mechanical proprietary treatment vaults fitted with appropriate filters prior to discharging into the City of Salem storm drain. The applicant has identified that Pacific Realty Associates, L.P. will be responsible for the installation and operations and maintenance of the stormwater facilities as provided for in the plan that was submitted on behalf of the applicant. Furthermore, proposed water quality facilities require approval through the City of Salem that may also require connector street improvement designed to meet water quality standards as outlined in the City of Salem's NPDES municipal storm sewer system permit.

3) **Isolation of in-water work areas:** Isolation of in-water work areas from the active flowing stream is required. Methods of isolation include, but are not limited to: timing work at low water so as to effectively work in the dry; using silt curtains; cofferdams; inflatable bags; geo blocks; sandbags; sheet pilings; or similar materials.

4) **Erosion Control**: Projects that disturb one acre or more require an NPDES 1200C Storm Water Discharge Permit. Contact the appropriate DEQ regional office for more information (Contact information can be found at: http://www.deq.state.or.us/wq/. During construction, the following erosion control measures, or comparable measures as specified in DEQ's *Oregon Sediment and Erosion Control Manual*, April 2005 must be implemented to prevent or control movement of soil into waters of the state.

   a. Filter bags, sediment traps or catch basins, vegetative strips, berms, Jersey barriers, fiber blankets, bonded fiber matrices, geotextiles, mulches, wattles, sediment fences, or other measures used in combination must be deployed to prevent movement of soil from uplands into waterways or wetlands;
   b. An adequate supply of materials needed to control erosion must be maintained at the project construction site;

c. To prevent stockpile erosion, compost berms, impervious materials or other equally effective methods must be deployed during rain events or when the stockpile site is not moved or reshaped for more than 48 hours;
d. Erosion control measures must be inspected and maintained daily, or more frequently as necessary, to ensure their continued effectiveness and must remain in place until all exposed soil is stabilized;
    i. If monitoring or inspection shows that the erosion and sediment controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.
    ii. Remove sediment from erosion and sediment controls once it has reached 1/3 of the exposed height of the control.
e. Unless part of the authorized permanent fill, all construction access points through, and staging areas in, riparian or wetland areas must use removable pads or mats to prevent soil compaction.
f. Avoided wetlands and planted areas must be flagged or fenced off to protect from disturbance and/or erosion.
g. Dredged or other excavated material must be placed on upland areas with stable slopes to prevent materials from eroding back into waterways or wetlands;
h. Sediment from disturbed areas or able to be tracked by vehicles onto pavement must not be allowed to leave the site in amounts that would reasonably be expected to enter waters of the state and impair water quality. Placement of clean aggregate at all construction entrances, and other best management practices; such as truck or wheel washes if needed, must be used when earth moving equipment will be leaving the site and traveling on paved surfaces.

5) **Deleterious waste materials**: Biologically harmful materials and construction debris including, but not limited to: petroleum products, chemicals, cement cured less than 24 hours, welding slag and grindings, concrete saw cutting by-products, sandblasted materials, chipped paint, tires, wire, steel posts, asphalt and waste concrete may not be placed in or where they could enter waterways or wetlands.

a. Concrete, cement, or grout must be cured for at least 24 hours prior to any contact with flowing waters;
b. Only clean fill, free of waste and polluted substances, may be used;
c. Best Management Practices must be employed to prevent discharges of spills of deleterious materials to surface or ground water;
d. An adequate supply of materials needed to contain deleterious materials during a weather event must be maintained at the project construction site and deployed as necessary; and
e. All foreign materials, refuse, and waste must be removed from the area.

6) **Spill Prevention:** Vehicles must be fueled, operated, maintained, and stored and construction materials must be stored in areas that minimize disturbance to habitat and prevent adverse effects from potential discharges. In addition, the following specific requirements apply:

a. Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150 feet or more from any waters of the state.
b. All vehicles operated within 150 feet of any waters of the state must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired before the vehicle resumes operation;
c. Before operations begin and as often as necessary during operation, equipment must be steam cleaned (or undergo an approved equivalent cleaning) until all visible external oil, grease, mud, and other visible contaminates are removed if the equipment will be used below the bank of the water body; and,
d. An adequate supply of materials (such as straw matting/bales, geotextiles, booms, diapers, and other absorbent materials) needed to contain spills must be maintained at the project construction site and deployed as necessary.

7) **Spill & Incident Reporting:**

a. In the event that petroleum products, chemicals, or any other deleterious materials are discharged into state waters, or onto land with a potential to enter state waters, the discharge must be promptly reported to the Oregon Emergency Response Service (OERS, 1-800-452-0311). Containment and cleanup must begin immediately and be completed as soon as possible.
b. If the project operations cause a water quality problem that results in distressed or dying fish, the operator must immediately: cease operations; take appropriate corrective measures to prevent further environmental damage; collect fish specimens and water samples; and notify DEQ, Oregon Department of Fish and Wildlife and other appropriate regulatory agencies.

8) **Vegetation Protection and Restoration:**

a. If authorized work results in unavoidable vegetative disturbance and the disturbance has not been accounted for in planned mitigation actions, riparian, wetland and shoreline vegetation must be successfully reestablished to a degree that it functions (for water quality purposes) at least as well as it did before the disturbance. The vegetation must be reestablished by the completion of authorized work.

9) The applicant must notify DEQ of any change in ownership and obtain DEQ review and approval before undertaking any change to the project that might significantly affect water quality.

10) DEQ may modify or revoke this 401 WQC, in accordance with OAR 340-048-0050, in the event of project changes or new information indicating that the project activities are having a significant adverse impact on state water quality or beneficial uses.

11) A copy of this 401 WQC letter shall be kept on site and readily available for reference by the applicant and its contractors, U.S. Army Corps of Engineers, DEQ and other appropriate state and local government inspectors.

12) This 401 WQC is invalid if the project is operated in a manner not consistent with the project description contained in the permit application materials.

13) The applicant and its contractors must allow DEQ site access at reasonable times as necessary to monitor compliance with these 401 WQC conditions.

If the applicant is dissatisfied with the conditions contained in this certification, a contested case hearing may be requested in accordance with OAR 340-048-0045. Such request must be made in writing to the DEQ Office of Compliance and Enforcement at 811 SW 6th Avenue, Portland Oregon 97204 within 20 days of the mailing of this certification.

The DEQ hereby certifies this project in accordance with the Clean Water Act and state rules, with the above conditions. If you have any questions, please contact Corey Saxon at saxon.corey @deq.state.or.us, by phone at 503 229-5051 or at the address on this letterhead.

Sincerely,

Steve Mrazik
Water Quality Manager
Northwest Region

T:CZS.2012-00048cert Pac Trust.doc

cc: Applicant
Dan Cary, DSL

DEPARTMENT OF THE ARMY
Corps of Engineers, Portland District
Regulatory Branch

Inadvertent Discovery Plan (IDP)

Background

Traditionally, tribes have managed the lands in Oregon for thousands of years. Although these lands are now broken up into segments of various ownerships and managing agencies, Native Americans still retain a strong connection to their ancestral lands. For Oregon tribes, archaeological/burial sites are not simply artifacts of the tribe's cultural past, but are considered sacred and represent a continuing connection with their ancestors. Native American ancestral remains, funerary objects, sacred objects and objects of cultural patrimony associated with Oregon Tribes are protected under state and federal law. These laws recognize and codify the tribes' rights in the decision-making process regarding ancestral remains and associated objects. Therefore, both the discovered ancestral remains and/or archaeological objects should be treated in a sensitive and respectful manner by all parties involved.

It is the policy of the Corps Regulatory program to work effectively with Native American Tribes, landowners, resource agencies, historic preservation organizations, stakeholders, applicants and the public to comply with the National Historic Preservation Act and other applicable laws and regulations, Executive Orders, Presidential Memoranda, and policy guidance documents, and to efficiently process permit applications so that development projects can proceed for the good of the Nation's economic health and national security. Respectful and meaningful coordination and consultations between the Corps, Native American Tribes, and the State Historic Preservation Office are conducted as we strive to balance economic needs with historic preservation concerns.

This IDP ensures all parties involved, during inadvertent discovery of cultural materials, are contacted and fulfill their obligation under state and federal laws, including but not limited to:

National Historic Preservation Act (NHPA) – **[16 USC 470] [36 CFR 60]**
Native American Graves Protection and Repatriation Act – **[25 USC 3001] [43 CFR 10]**
Indian Graves and Protection Objects – **ORS 97.740-S 97.760**
Archaeological Objects and Sites – **ORS 358.905 – 358.955**
Procedures for the Protection of Historic Properties – **[33 CFR 325 – Appendix C]**
Consultation and Coordination with Indian Tribal Governments – **[Executive Order – 13175]**

Suspend Work

Cultural Resources and Human Burials: In the event evidence of human burials, human remains, cultural items, suspected cultural items, or historic properties, as identified by the National Historic Preservation Act, are discovered and/or may be affected during the course of the work authorized, the Permittee shall **Immediately Cease All Ground Disturbing Activities**.

Failure to stop work immediately and until such time as the Corps has coordinated with all appropriate agencies and complied with the provisions of 33 CFR 325, Appendix C, the National Historic Preservation Act and other pertinent regulations, could result in violation of state and federal laws. Violators are subject to civil and criminal penalties.

Notification Process for Permittee and/or Archaeological Monitor

The person(s) making the discovery shall immediately notify the permittee(s), the Corps of Engineers, and other appropriate agencies as necessary.

- Notification to the Portland District Regulatory Branch shall be made by fax (503-808-4375) as soon as possible following discovery but in no case later than 24 hours. The fax shall clearly specify the purpose is to report a cultural resource discovery, provide the Permittee's name, Corps Permit No., and the archaeological monitor's contact information for follow-up purposes.
- Follow up the fax notification with an email and phone call to the Corps of Engineers Project Manager identified in the permit letter.

Notification Process for Corps Project Manager

The Project Manager or person(s) designated to manage the inadvertent discovery shall immediately notify the following agencies:

- Oregon State Historic Preservation Office, Dennis Griffin, office phone (503) 986-0674.
- Washington Department of Archaeology and Historic Preservation, Greg Griffith, office phone (360) 586-3073.
- Oregon State Police [**if human remains are found**], Sgt. Chris Allori, office phone (503) 731-3020, cell (503) 708-6461.
- Commission on Indian Services (CIS) [provide the list of appropriate Native American Tribes], Karen Quigley, Director, office phone (503) 986-1067.

Tribes:

- Confederated Tribes of the Grand Ronde Community of Oregon, Eirik Thorsgard (503) 879-1630; Don Day (503) 879-2185.
- Confederated Tribes of the Warm Springs Reservation of Oregon, Sally Bird (541) 553-3555.
- Confederated Tribes of the Siletz Reservation, Oregon, Robert Kentta (541) 351-0148.
- Confederated Tribes of the Umatilla Reservation, Oregon, Carey Miller (541) 276-3629; Teara Farrow (541) 276-3629; Eric Quaempts (541) 276-3447.
- Cow Creek Band of Umpqua Tribe of Indians, Jessie Plueard (541) 677-5575 ext. 5577.
- Coquille Tribe of Oregon, Nicole Norris (541) 756-0904.
- Klamath Tribes, Oregon, Lillian Watah (541) 783-2219 ext. 159; Perry Chocktoot (541) 783-2210 ext. 178.
- Confederated Tribes of Coos Lower Umpqua and Siuslaw Indians of Oregon, Agness Castronuevo (541) 888-7513.
- Fort Bidwell Indians Community of the Fort Bidwell Reservation of California, John Vass (530) 279-6310.
- Smith River Rancheria, California, Suntayea Steinruck (707) 487-9255 ext. 3180.
- Burns Paiute Tribe of the Burns Paiute Indian Colony of Oregon, Theresa Peck (541) 573-1375.
- Nez Perce Tribe of Idaho, Vera Sonneck (208) 843-7313.
- Yakama Indian Nation, Thalia Sachtleben, (509) 865-5121 ext. 6074.
- Cowlitz Indian Tribe, Washington, Dave Burlingame, (360) 577-6962.

The Corps will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Registry of Historic

Places. In addition, the Corps will coordinate a Site Avoidance Plan (SAP) and/or a Scope of Work (SOW) with the SHPO/DAHP, the tribe(s) and the permittee to avoid or excavate the archaeological/burial site. In the event the Corps decides to delegate their cultural resource protection responsibilities to another federal or state agency, the Corps shall contact the interested parties and provide those parties with the appropriate new contact person(s).

Plan of Action (POA)

In the event human burials, human remains, cultural items, suspected cultural items, or historic properties, as identified by the National Historic Preservation Act, are discovered and/or may be affected during the course of the work authorized, the archaeological monitor, and/or designee, has the authority to temporarily stop all ground disturbance activities to further inspect the material(s). If an isolated artifact (defined as fewer then 10 artifacts by the Oregon SHPO) is identified, the monitor shall determine whether sufficient quantities and/or evidence of artifacts warrant presence to define a site. If upon closer examination the materials discovered are not consistent with human burials, human remains, cultural items, suspected cultural items, or historic properties, as identified by the National Historic Preservation Act, the monitor will allow work to proceed but with caution and at a slower rate until the monitor is confident no sites are represented.

Upon positive identification of human burials, human remains, cultural items, suspected cultural items, or historic properties, as identified by the National Historic Preservation Act, the monitor will maintain the cease work order, make efforts to secure the discovery location, and immediately notify the permittee and/or designee of the positive discovery as defined in the notification process above.

Human Remains POA

If human burials and/or human remains are discovered, the monitor will treat the remains with sensitivity and respect, ensure all unauthorized personnel have vacated the site location in a safe manner, make reasonable efforts to secure the location, and stabilize the remains if necessary, e.g. they are endangered of falling out a trench wall. Every reasonable effort will be made by the monitor(s) to ensure the remains are not physically handled or examined by unauthorized personnel until the proper notifications have been made. Reference is made to the Tribal Position Paper on Human Remains found on SHPO's website at: http://www.oregon.gov/OPRD/HCD/ARCH/docs/Tribal_position_paper_on_Human_Remains.pdf.

Treatment Plan (TP)

A treatment plan (TP) will be developed between the Corps, SHPO/DAHP, Tribe(s) and the Permittee during consultation to ensure the proper handling and curation of human remains and/or cultural items is clearly outlined and agreed upon. The TP will define the items found; develop a strategy for handling/moving human remains and/or cultural items; develop a strategy for determining whether additional human remains and/or cultural items are endangered; determine if additional testing is necessary to identify site boundaries; and, determine the disposition of the human remains and/or cultural items. The TP will be agreed upon by all parties involved before any future ground disturbance activities resume.

Construction related activities and/or ground disturbance activities shall not resume until authorization from the Corps has been given.

This plan was developed to ensure the safeguarding of our Nation's heritage through inadvertent discovery, and to ensure the Corps' Tribal-Trust responsibilities are met with Diligence, Responsiveness, Reliability, Accuracy, and Respect to our fellow government agencies.

COMPLIANCE CERTIFICATION

U.S. Army Corps of Engineers
Post Office Box 2946
Portland, Oregon 97208-2946

1. Permittee Name: Mr. Andrew Jones, PacTrust

2. County: Marion

3. Corps Permit No: NWP-2012-48

4. Corps Contact: Karen.L.Nelson@usace.army.mil

5. Type of Activity: IP – Commercial Development

Please sign and return form to the address above:

I hereby certify that the work authorized the above referenced permit has been completed in accordance with the terms and conditions of said permit and that required mitigation is completed in accordance with the permit conditions, except as described below.

_____

Signature of Permittee **Date**

Department of State Lands
775 Summer Street, Suite 100
Salem, OR 97301-1279
☎ 503-986-5200

Permit No.:	**49112-RF**
Permit Type:	**Removal/Fill**
Waterway:	**Wetland**
County:	**Marion**
Expiration Date:	**June 18, 2013**

PACTRUST REALTY, INC.

IS AUTHORIZED IN ACCORDANCE WITH ORS 196.800 TO 196.990 TO PERFORM THE OPERATIONS DESCRIBED IN THE ATTACHED COPY OF THE APPLICATION, SUBJECT TO THE SPECIAL CONDITIONS LISTED ON ATTACHMENT A AND TO THE FOLLOWING GENERAL CONDITIONS:

1. This permit does not authorize trespass on the lands of others. The permit holder shall obtain all necessary access permits or rights-of-way before entering lands owned by another. For new linear facility projects, the removal-fill activity cannot occur until the permit holder obtains either the landowner's consent, a right, title or interest with respect to the property that is sufficient to undertake the removal or fill activity, or a court order or judgment authorizing the use of the property.
2. This permit does not authorize any work that is not in compliance with local zoning or other local, state, or federal regulation pertaining to the operations authorized by this permit. The permit holder is responsible for obtaining the necessary approvals and permits before proceeding under this permit.
3. All work done under this permit must comply with Oregon Administrative Rules, Chapter 340; Standards of Quality for Public Waters of Oregon. Specific water quality provisions for this project are set forth on Attachment A.
4. Violations of the terms and conditions of this permit are subject to administrative and/or legal action, which may result in revocation of the permit or damages. The permit holder is responsible for the activities of all contractors or other operators involved in work done at the site or under this permit.
5. Employees of the Department of State Lands and all duly authorized representatives of the Director shall be permitted access to the project area at all reasonable times for the purpose of inspecting work performed under this permit.
6. Any permit holder who objects to the conditions of this permit may request a hearing from the Director, in writing, within twenty-one (21) calendar days of the date this permit was issued.
7. In issuing this permit, the Department of State Lands makes no representation regarding the quality or adequacy of the permitted project design, materials, construction, or maintenance, except to approve the project's design and materials, as set forth in the permit application, as satisfying the resource protection, scenic, safety, recreation, and public access requirements of ORS Chapters 196, 390, and related administrative rules.
8. Permittee shall defend and hold harmless the State of Oregon, and its officers, agents, and employees from any claim, suit, or action for property damage or personal injury or death arising out of the design, material, construction, or maintenance of the permitted improvements.
9. Authorization from the U.S. Army Corps of Engineers may also be required.

NOTICE: If removal is from state-owned submerged and submersible land, the applicant must comply with leasing and royalty provisions of ORS 274.530. If the project involves creation of new lands by filling on state-owned submerged or submersible lands, you must comply with ORS 274.905 to 274.940. This permit does not relieve the permittee of an obligation to secure appropriate leases from the Department of State Lands, to conduct activities on state-owned submerged or submersible lands. Failure to comply with these requirements may result in civil or criminal liability. For more information about these requirements, please contact the Department of State Lands, 503-986-5200.

Lori Warner-Dickason, Northern Region Manager
Wetlands & Waterways Conservation Div.
Oregon Department of State Lands

Authorized Signature

June 18, 2012
Date Issued

Consultant

ATTACHMENT A

Permit Holder: PacTrust Realty, Inc.

Project Name: Kuebler Blvd and 27th Avenue

Special Conditions for Removal/Fill Permit No. 49112-RF

READ AND BECOME FAMILIAR WITH CONDITIONS OF YOUR PERMIT.

The project site may be inspected by the Department of State Lands (DSL) as part of our monitoring program. DSL has the right to stop or modify the project at any time if you are not in compliance with these conditions. A copy of this permit shall be available at the work site whenever authorized operations are being conducted.

1. **Responsible Party:** By signature on the application, Terry L. O'Toole is acting as the representative of PacTrust Realty, Inc. By proceeding under this permit, PacTrust Realty, Inc. agrees to comply with and fulfill all terms and conditions of this permit, unless the permit is officially transferred to another party as approved by DSL.

2. **Authorization to Conduct Removal and/or Fill:** This permit authorizes the placement of material up to 7,100 cubic yards in wetlands and 14,840 cubic yards in waters of the state and removal of material up to 580 cubic yards in wetlands and 1,570 cubic yards in waters of the state in T8S R3W Section 12C, Tax Lot 1800, 1900, 200, 2100, Marion County, as described in the attached permit application, map and drawings, received March 29, 2012. In the event information in the application conflicts with these permit conditions, the permit conditions prevail.

3. **Work Period in Jurisdictional Areas:** Fill or removal activities below the ordinary high water elevation of the tributary of Pringle Creek shall be conducted between June 1 to October 15, unless otherwise coordinated with Oregon Department of Fish and Wildlife and approved in writing by DSL.

4. **Changes to the Project or Inconsistent Requirements from Other Permits:** It is the permittee's responsibility to ensure that all state, federal and local permits are consistent and compatible with the final approved project plans and the project as executed. Any changes made in project design, implementation and/or operating conditions to comply with conditions imposed by other permits must be approved by DSL prior to implementation.

5. **DSL May Halt or Modify:** DSL retains the authority to temporarily halt or modify the project in case of unforeseen damage to natural resources.

6. **DSL May Modify Conditions Upon Permit Renewal:** DSL retains the authority to modify conditions upon renewal, as appropriate, pursuant to the applicable rules in effect at the time of the request for renewal or to protect waters of this state.

Pre-Construction

7. **Local Government Approval Required Before Beginning Work:** Issuance of this permit is contingent upon acquisition of appropriate permits and approvals including an approved site

Plan Review from the City of Salem. There shall be no removal or fill in wetlands or waterways until the local development permit, approving the construction of a commercial development is obtained.

8. **Stormwater Management Approval Required Before Beginning Work:** Issuance of the permit is contingent upon acquisition of a National Pollution Discharge Elimination System (NPDES) permit from the Oregon Department of Environmental Quality.

General Construction Conditions

9. **Water Quality Certification:** The Department of Environmental Quality (DEQ) may evaluate this project for a Clean Water Act Section 401 Water Quality Certification (WQC). If the evaluation results in issuance of a Section 401 WQC, that turbidity condition will govern any allowable turbidity exceedance and monitoring requirements.

10. **Erosion Control Methods:** The following erosion control measures (and others as appropriate) shall be installed prior to construction and maintained during and after construction as appropriate, to prevent erosion and minimize movement of soil into waters of this state.

    a. All exposed soils shall be stabilized during and after construction in order to prevent erosion and sedimentation.
    b. Filter bags, sediment fences, sediment traps or catch basins, leave strips or berms, or other measures shall be used to prevent movement of soil into waterways and wetlands.
    c. To prevent erosion, use of compost berms, impervious materials or other equally effective methods, shall be used to protect soil stockpiled during rain events or when the stockpile site is not moved or reshaped for more than 48 hours.
    d. Unless part of the authorized permanent fill, all construction access points through, and staging areas in, riparian and wetland areas shall use removable pads or mats to prevent soil compaction. However, in some wetland areas under dry summer conditions, this requirement may be waived upon approval by DSL. At project completion, disturbed areas with soil exposed by construction activities shall be stabilized by mulching and native vegetative plantings/seeding. Sterile grass may be used instead of native vegetation for temporary sediment control. If soils are to remain exposed more than seven days after completion of the permitted work, they shall be covered with erosion control pads, mats or similar erosion control devices until vegetative stabilization is installed.
    e. Where vegetation is used for erosion control on slopes steeper than 2:1, a tackified seed mulch shall be used so the seed does not wash away before germination and rooting.
    f. Dredged or other excavated material shall be placed on upland areas having stable slopes and shall be prevented from eroding back into waterways and wetlands.
    g. Erosion control measures shall be inspected and maintained as necessary to ensure their continued effectiveness until soils become stabilized.
    h. All erosion control structures shall be removed when the project is complete and soils are stabilized and vegetated.

11. **Hazardous, Toxic, and Waste Material Handling:** Petroleum products, chemicals, fresh cement, sandblasted material and chipped paint, wood treated with leachable preservatives or other deleterious waste materials shall not be allowed to enter waters of this state. Machinery refueling is to occur at least 150 feet from waters of this state and confined in a designated area to prevent spillage into waters of this state. Barges shall have containment system to effectively prevent petroleum products or other deleterious material from entering waters of this state. Project-related spills into waters of this state or onto land with a potential to enter waters of this state shall be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311.

12. **Federally Listed Endangered or Threatened Species:** When listed species are present, the authorization holder must comply with the Federal Endangered Species Act. If previously unknown listed species are encountered during construction, all construction activity shall immediately cease and the permit holder must contact DSL.

13. **Archaeological Resources**: If any archaeological resources and/or artifacts are encountered during construction, all construction activity shall immediately cease. The State Historic Preservation Office shall be contacted (phone: 503-986-0674).

Mitigation Conditions

14. **Mitigation Bank Credit Purchase**: Mitigation for the unavoidable loss of 0.36 acres of slope palustrine emergent wetland has been accomplished via purchase of 0.36 credits from the Mud Slough Wetland Mitigation Bank, per the proof of purchase.

Issued: June 18, 2012

Public Works Department
Permits: (503) 588-6211
Inspections: (503) 589-2021
Fax: (503) 588-6025

City Hall
555 Liberty St SE
Room 325
Salem, OR 97301-3503

GRADING PERMIT - Commercial

Location of Work: 2541 BOONE RD SE

Permit Number: 13-106536-GD
Date Issued: 5/9/2013

Applicant:
WESTECH ENGINEERING INC
3841 FAIRVIEW INDUSTRIAL DR SE
SUITE 100
SALEM OR 97302

Contractor:

Engineer:
WESTECH ENGINEERING INC
3841 FAIRVIEW INDUSTRIAL DR SE
SUITE 100
SALEM OR 97302

Associated Permits Included:

- **Erosion Control - 1200-C**
- **Ex/Fill**

Terms and Conditions:

1. Permitted work shall comply with the Salem Revised Code, Design Standards, City Standard Construction Specifications, applicable state and federal regulations, and other applicable requirements.
2. Permittee shall indemnify, defend and save harmless the City of Salem, its officers, employees and agents, from any and all claims arising out of or in connection with work under this permit.
3. Utility locations are based on record information and should be field-verified. Call 1-800-332-2344 at least 48 hours prior to construction for on-site locating of utilities.
4. All permits are valid for 180 days from the date of issuance unless otherwise noted. Extension may be granted at the discretion of the Public Works Department.
5. Erosion control measures shall be in place prior to any ground disturbing activities.
6. Approved City inspection of erosion control measures is required prior to commencement of ground disturbing activities. Call 503-589-2021 for inspection on next business day.

Special Conditions:

COMPLY WITH DSL, CORPS, AND DEQ PERMITS.

Project Type: Comm/Ind//Multifamily/Exca/Fill/Fire Services/1200-C

Erosion Control:

Erosion Control Permit Req'd?: 1200-C

Adjacent to Waterway/Wetlands?: Yes

Ex/Fill:

Excavation/Fill Permit Req'd: Yes
Fill Quantity (CY): 90000

Excavation Quantity (CY): 90000

Schedule inspections online at: *https://splash.cityofsalem.net*

CITY OF Salem AT YOUR SERVICE

555 Liberty St SE
Room 325 - receipt
Salem, OR 97301-3503

Sequence #: 13-106536-GD
Payment #: 10210824
Date: May 09, 2013
Check #: 138978

GRADING PERMIT RECEIPT

Customer

PACTRUST
15350 SW SEQUOIA PY SUITE 300
PORTLAND OR 97224

Payment For Address: **2541 BOONE RD SE**

Description	Billed Fees	Previously Paid	Today's Payment	Balance Due
Automation Surcharge	$5.00			
Erosion Control 10.1	$222.00			
Excavation Fill 10.1	$1,310.00			
Total for Bill # 784462:	**$1,537.00**	$0.00	**$1,537.00**	$0.00
RECEIPT TOTAL:	$1,537.00	$0.00	**$1,537.00**	$0.00

Total Paid: $1,537.00

PAY ONLINE: Have you heard about SPLASH? That is Salem's Permitting, Licensing, and Application Services Home website. You can make this payment online using your VISA or MasterCard if you become a registered SPLASH user. If you are interested, go to http://splash.cityofsalem.net

Department of State Lands
775 Summer Street, Suite 100
Salem, OR 97301-1279
☎ 503-986-5200

NOTICE: This Permit Must Be On Work Site

Permit No.:	**49112-RF Renewal**
Permit Type:	**Removal/Fill**
Waterway:	**Wetland**
County:	**Marion**
Expiration Date:	**June 18, 2014**

PACTRUST REALTY, INC.

IS AUTHORIZED IN ACCORDANCE WITH ORS 196.800 TO 196.990 TO PERFORM THE OPERATIONS DESCRIBED IN THE ATTACHED COPY OF THE APPLICATION, SUBJECT TO THE SPECIAL CONDITIONS LISTED ON ATTACHMENT A AND TO THE FOLLOWING GENERAL CONDITIONS:

1. This permit does not authorize trespass on the lands of others. The permit holder shall obtain all necessary access permits or rights-of-way before entering lands owned by another. For new linear facility projects, the removal-fill activity cannot occur until the permit holder obtains either the landowner's consent, a right, title or interest with respect to the property that is sufficient to undertake the removal or fill activity, or a court order or judgment authorizing the use of the property.
2. This permit does not authorize any work that is not in compliance with local zoning or other local, state, or federal regulation pertaining to the operations authorized by this permit. The permit holder is responsible for obtaining the necessary approvals and permits before proceeding under this permit.
3. All work done under this permit must comply with Oregon Administrative Rules, Chapter 340; Standards of Quality for Public Waters of Oregon. Specific water quality provisions for this project are set forth on Attachment A.
4. Violations of the terms and conditions of this permit are subject to administrative and/or legal action, which may result in revocation of the permit or damages. The permit holder is responsible for the activities of all contractors or other operators involved in work done at the site or under this permit.
5. Employees of the Department of State Lands and all duly authorized representatives of the Director shall be permitted access to the project area at all reasonable times for the purpose of inspecting work performed under this permit.
6. Any permit holder who objects to the conditions of this permit may request a hearing from the Director, in writing, within twenty-one (21) calendar days of the date this permit was issued.
7. In issuing this permit, the Department of State Lands makes no representation regarding the quality or adequacy of the permitted project design, materials, construction, or maintenance, except to approve the project's design and materials, as set forth in the permit application, as satisfying the resource protection, scenic, safety, recreation, and public access requirements of ORS Chapters 196, 390, and related administrative rules.
8. Permittee shall defend and hold harmless the State of Oregon, and its officers, agents, and employees from any claim, suit, or action for property damage or personal injury or death arising out of the design, material, construction, or maintenance of the permitted improvements.
9. Authorization from the U.S. Army Corps of Engineers may also be required.

OPERATORS COPY

NOTICE: If removal is from state-owned submerged and submersible land, the applicant must comply with leasing and royalty provisions of ORS 274.530. If the project involves creation of new lands by filling on state-owned submerged or submersible lands, you must comply with ORS 274.905 to 274.940. This permit does not relieve the permittee of an obligation to secure appropriate leases from the Department of State Lands, to conduct activities on state-owned submerged or submersible lands. Failure to comply with these requirements may result in civil or criminal liability. For more information about these requirements, please contact the Department of State Lands, 503-986-5200.

Lori Warner-Dickason, Northern Region Manager
Wetlands & Waterways Conservation Div.
Oregon Department of State Lands

Authorized Signature

May 2, 2013
Date Issued

ATTACHMENT A

Permit Holder: PacTrust Realty, Inc.

Project Name: Kuebler Blvd and 27th Avenue

Special Conditions for Removal/Fill Permit No. 49112-RF

READ AND BECOME FAMILIAR WITH CONDITIONS OF YOUR PERMIT.

The project site may be inspected by the Department of State Lands (DSL) as part of our monitoring program. DSL has the right to stop or modify the project at any time if you are not in compliance with these conditions. A copy of this permit shall be available at the work site whenever authorized operations are being conducted.

1. **Responsible Party:** By signature on the application, Terry L. O'Toole is acting as the representative of PacTrust Realty, Inc.. By proceeding under this permit, PacTrust Realty, Inc. agrees to comply with and fulfill all terms and conditions of this permit, unless the permit is officially transferred to another party as approved by DSL.

2. **Authorization to Conduct Removal and/or Fill:** This permit authorizes the placement of material up to 7,100 cubic yards in wetlands and 14,840 cubic yards in waters of the state and removal of material up to 580 cubic yards in wetlands and 1,570 cubic yards in waters of the state in T8S R3W Section 12C, Tax Lot 1800, 1900, 200, 2100, Marion County, as described in the attached permit application, map and drawings, received March 29, 2012. In the event information in the application conflicts with these permit conditions, the permit conditions prevail.

3. **Work Period in Jurisdictional Areas:** Fill or removal activities below the ordinary high water elevation of the tributary of Pringle Creek shall be conducted between June 1 to October 15, unless otherwise coordinated with Oregon Department of Fish and Wildlife and approved in writing by DSL.

4. **Changes to the Project or Inconsistent Requirements from Other Permits:** It is the permittee's responsibility to ensure that all state, federal and local permits are consistent and compatible with the final approved project plans and the project as executed. Any changes made in project design, implementation and/or operating conditions to comply with conditions imposed by other permits must be approved by DSL prior to implementation.

5. **DSL May Halt or Modify:** DSL retains the authority to temporarily halt or modify the project in case of unforeseen damage to natural resources.

6. **DSL May Modify Conditions Upon Permit Renewal:** DSL retains the authority to modify conditions upon renewal, as appropriate, pursuant to the applicable rules in effect at the time of the request for renewal or to protect waters of this state.

Pre-Construction

7. **Local Government Approval Required Before Beginning Work:** Issuance of this permit is contingent upon acquisition of appropriate permits and approvals including an approved site

Plan Review from the City of Salem. There shall be no removal or fill in wetlands or waterways until the local development permit, approving the construction of a commercial development is obtained.

8. **Stormwater Management Approval Required Before Beginning Work:** Issuance of the permit is contingent upon acquisition of a National Pollution Discharge Elimination System (NPDES) permit from the Oregon Department of Environmental Quality.

General Construction Conditions

9. **Water Quality Certification:** The Department of Environmental Quality (DEQ) may evaluate this project for a Clean Water Act Section 401 Water Quality Certification (WQC). If the evaluation results in issuance of a Section 401 WQC, that turbidity condition will govern any allowable turbidity exceedance and monitoring requirements.

10. **Erosion Control Methods:** The following erosion control measures (and others as appropriate) shall be installed prior to construction and maintained during and after construction as appropriate, to prevent erosion and minimize movement of soil into waters of this state.

    a. All exposed soils shall be stabilized during and after construction in order to prevent erosion and sedimentation.
    b. Filter bags, sediment fences, sediment traps or catch basins, leave strips or berms, or other measures shall be used to prevent movement of soil into waterways and wetlands.
    c. To prevent erosion, use of compost berms, impervious materials or other equally effective methods, shall be used to protect soil stockpiled during rain events or when the stockpile site is not moved or reshaped for more than 48 hours.
    d. Unless part of the authorized permanent fill, all construction access points through, and staging areas in, riparian and wetland areas shall use removable pads or mats to prevent soil compaction. However, in some wetland areas under dry summer conditions, this requirement may be waived upon approval by DSL. At project completion, disturbed areas with soil exposed by construction activities shall be stabilized by mulching and native vegetative plantings/seeding. Sterile grass may be used instead of native vegetation for temporary sediment control. If soils are to remain exposed more than seven days after completion of the permitted work, they shall be covered with erosion control pads, mats or similar erosion control devices until vegetative stabilization is installed.
    e. Where vegetation is used for erosion control on slopes steeper than 2:1, a tackified seed mulch shall be used so the seed does not wash away before germination and rooting.
    f. Dredged or other excavated material shall be placed on upland areas having stable slopes and shall be prevented from eroding back into waterways and wetlands.
    g. Erosion control measures shall be inspected and maintained as necessary to ensure their continued effectiveness until soils become stabilized.
    h. All erosion control structures shall be removed when the project is complete and soils are stabilized and vegetated.

11. **Hazardous, Toxic, and Waste Material Handling:** Petroleum products, chemicals, fresh cement, sandblasted material and chipped paint, wood treated with leachable preservatives or other deleterious waste materials shall not be allowed to enter waters of this state. Machinery refueling is to occur at least 150 feet from waters of this state and confined in a designated area to prevent spillage into waters of this state. Barges shall have containment system to effectively prevent petroleum products or other deleterious material from entering waters of this state. Project-related spills into waters of this state or onto land with a potential to enter waters of this state shall be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311.

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13. **Archaeological Resources**: If any archaeological resources and/or artifacts are encountered during construction, all construction activity shall immediately cease. The State Historic Preservation Office shall be contacted (phone: 503-986-0674).

Mitigation Conditions

14. **Mitigation Bank Credit Purchase**: Mitigation for the unavoidable loss of 0.36 acres of slope palustrine emergent wetland has been accomplished via purchase of 0.36 credits from the Mud Slough Wetland Mitigation Bank, per the proof of purchase.

Renewal Issued: May 2, 2013

Department of State Lands
775 Summer Street, Suite 100
Salem, OR 97301-1279
☎ 503-986-5200

Permit No.:	**49112-RF Renewal**
Permit Type:	**Removal/Fill**
Waterway:	**Wetland**
County:	**Marion**
Expiration Date:	**June 18, 2014**

PACTRUST REALTY, INC.

IS AUTHORIZED IN ACCORDANCE WITH ORS 196.800 TO 196.990 TO PERFORM THE OPERATIONS DESCRIBED IN THE ATTACHED COPY OF THE APPLICATION, SUBJECT TO THE SPECIAL CONDITIONS LISTED ON ATTACHMENT A AND TO THE FOLLOWING GENERAL CONDITIONS:

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2. This permit does not authorize any work that is not in compliance with local zoning or other local, state, or federal regulation pertaining to the operations authorized by this permit. The permit holder is responsible for obtaining the necessary approvals and permits before proceeding under this permit.
3. All work done under this permit must comply with Oregon Administrative Rules, Chapter 340; Standards of Quality for Public Waters of Oregon. Specific water quality provisions for this project are set forth on Attachment A.
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5. Employees of the Department of State Lands and all duly authorized representatives of the Director shall be permitted access to the project area at all reasonable times for the purpose of inspecting work performed under this permit.
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8. Permittee shall defend and hold harmless the State of Oregon, and its officers, agents, and employees from any claim, suit, or action for property damage or personal injury or death arising out of the design, material, construction, or maintenance of the permitted improvements.
9. Authorization from the U.S. Army Corps of Engineers may also be required.

NOTICE: If removal is from state-owned submerged and submersible land, the applicant must comply with leasing and royalty provisions of ORS 274.530. If the project involves creation of new lands by filling on state-owned submerged or submersible lands, you must comply with ORS 274.905 to 274.940. This permit does not relieve the permittee of an obligation to secure appropriate leases from the Department of State Lands, to conduct activities on state-owned submerged or submersible lands. Failure to comply with these requirements may result in civil or criminal liability. For more information about these requirements, please contact the Department of State Lands, 503-986-5200.

Lori Warner-Dickason, Northern Region Manager
Wetlands & Waterways Conservation Div.
Oregon Department of State Lands

Authorized Signature

May 2, 2013
Date Issued

ATTACHMENT A

Permit Holder: PacTrust Realty, Inc.

Project Name: Kuebler Blvd and 27th Avenue

Special Conditions for Removal/Fill Permit No. 49112-RF

READ AND BECOME FAMILIAR WITH CONDITIONS OF YOUR PERMIT.

The project site may be inspected by the Department of State Lands (DSL) as part of our monitoring program. DSL has the right to stop or modify the project at any time if you are not in compliance with these conditions. A copy of this permit shall be available at the work site whenever authorized operations are being conducted.

1. **Responsible Party:** By signature on the application, Terry L. O'Toole is acting as the representative of PacTrust Realty, Inc.. By proceeding under this permit, PacTrust Realty, Inc. agrees to comply with and fulfill all terms and conditions of this permit, unless the permit is officially transferred to another party as approved by DSL.

2. **Authorization to Conduct Removal and/or Fill:** This permit authorizes the placement of material up to 7,100 cubic yards in wetlands and 14,840 cubic yards in waters of the state and removal of material up to 580 cubic yards in wetlands and 1,570 cubic yards in waters of the state in T8S R3W Section 12C, Tax Lot 1800, 1900, 200, 2100, Marion County, as described in the attached permit application, map and drawings, received March 29, 2012. In the event information in the application conflicts with these permit conditions, the permit conditions prevail.

3. **Work Period in Jurisdictional Areas:** Fill or removal activities below the ordinary high water elevation of the tributary of Pringle Creek shall be conducted between June 1 to October 15, unless otherwise coordinated with Oregon Department of Fish and Wildlife and approved in writing by DSL.

4. **Changes to the Project or Inconsistent Requirements from Other Permits:** It is the permittee's responsibility to ensure that all state, federal and local permits are consistent and compatible with the final approved project plans and the project as executed. Any changes made in project design, implementation and/or operating conditions to comply with conditions imposed by other permits must be approved by DSL prior to implementation.

5. **DSL May Halt or Modify:** DSL retains the authority to temporarily halt or modify the project in case of unforeseen damage to natural resources.

6. **DSL May Modify Conditions Upon Permit Renewal:** DSL retains the authority to modify conditions upon renewal, as appropriate, pursuant to the applicable rules in effect at the time of the request for renewal or to protect waters of this state.

Pre-Construction

7. **Local Government Approval Required Before Beginning Work:** Issuance of this permit is contingent upon acquisition of appropriate permits and approvals including an approved site

Plan Review from the City of Salem. There shall be no removal or fill in wetlands or waterways until the local development permit, approving the construction of a commercial development is obtained.

8. **Stormwater Management Approval Required Before Beginning Work:** Issuance of the permit is contingent upon acquisition of a National Pollution Discharge Elimination System (NPDES) permit from the Oregon Department of Environmental Quality.

General Construction Conditions

9. **Water Quality Certification:** The Department of Environmental Quality (DEQ) may evaluate this project for a Clean Water Act Section 401 Water Quality Certification (WQC). If the evaluation results in issuance of a Section 401 WQC, that turbidity condition will govern any allowable turbidity exceedance and monitoring requirements.

10. **Erosion Control Methods:** The following erosion control measures (and others as appropriate) shall be installed prior to construction and maintained during and after construction as appropriate, to prevent erosion and minimize movement of soil into waters of this state.

    a. All exposed soils shall be stabilized during and after construction in order to prevent erosion and sedimentation.
    b. Filter bags, sediment fences, sediment traps or catch basins, leave strips or berms, or other measures shall be used to prevent movement of soil into waterways and wetlands.
    c. To prevent erosion, use of compost berms, impervious materials or other equally effective methods, shall be used to protect soil stockpiled during rain events or when the stockpile site is not moved or reshaped for more than 48 hours.
    d. Unless part of the authorized permanent fill, all construction access points through, and staging areas in, riparian and wetland areas shall use removable pads or mats to prevent soil compaction. However, in some wetland areas under dry summer conditions, this requirement may be waived upon approval by DSL. At project completion, disturbed areas with soil exposed by construction activities shall be stabilized by mulching and native vegetative plantings/seeding. Sterile grass may be used instead of native vegetation for temporary sediment control. If soils are to remain exposed more than seven days after completion of the permitted work, they shall be covered with erosion control pads, mats or similar erosion control devices until vegetative stabilization is installed.
    e. Where vegetation is used for erosion control on slopes steeper than 2:1, a tackified seed mulch shall be used so the seed does not wash away before germination and rooting.
    f. Dredged or other excavated material shall be placed on upland areas having stable slopes and shall be prevented from eroding back into waterways and wetlands.
    g. Erosion control measures shall be inspected and maintained as necessary to ensure their continued effectiveness until soils become stabilized.
    h. All erosion control structures shall be removed when the project is complete and soils are stabilized and vegetated.

11. **Hazardous, Toxic, and Waste Material Handling:** Petroleum products, chemicals, fresh cement, sandblasted material and chipped paint, wood treated with leachable preservatives or other deleterious waste materials shall not be allowed to enter waters of this state. Machinery refueling is to occur at least 150 feet from waters of this state and confined in a designated area to prevent spillage into waters of this state. Barges shall have containment system to effectively prevent petroleum products or other deleterious material from entering waters of this state. Project-related spills into waters of this state or onto land with a potential to enter waters of this state shall be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311.

12. **Federally Listed Endangered or Threatened Species:** When listed species are present, the authorization holder must comply with the Federal Endangered Species Act. If previously unknown listed species are encountered during construction, all construction activity shall immediately cease and the permit holder must contact DSL.

13. **Archaeological Resources**: If any archaeological resources and/or artifacts are encountered during construction, all construction activity shall immediately cease. The State Historic Preservation Office shall be contacted (phone: 503-986-0674).

Mitigation Conditions

14. **Mitigation Bank Credit Purchase**: Mitigation for the unavoidable loss of 0.36 acres of slope palustrine emergent wetland has been accomplished via purchase of 0.36 credits from the Mud Slough Wetland Mitigation Bank, per the proof of purchase.

Renewal Issued: May 2, 2013