GLADSTONE PLANNING COMMISSION AGENDA
GLADSTONE CITY HALL, 525 PORTLAND AVENUE

Tuesday, December 15, 2015

6:30 P.M. CALL TO ORDER
ROLL CALL
FLAG SALUTE

CONSENT AGENDA

All items listed below are considered to be routine and will be enacted by one motion. There will be no separate discussion of these items unless a commission member or person in the audience requests specific items to be removed from the Consent Agenda for discussion prior to the time the commission votes on the motion to adopt the Consent Agenda.

1. Approval of November 17, 2015 Minutes

REGULAR AGENDA

2. Public Hearing:

   - Z0475-15, et al.; Design Review and related applications involving multi-building/multi-use development on property located to the east of and adjacent to the Walgreen's site, on the south side of Arlington Street. Health club and restaurants. Site is zoned C-3, General Commercial and includes overlays for Habitat (HCA), Water Quality (WQRD) and Floodplain. There are six (6) applications related to the proposal: Design Review, Partition, Habitat Conservation Area (2), Water Quality Resource District and Flood Management Area District. The applications are being reviewed simultaneously.

DISCUSSION:

BUSINESS FROM THE PLANNING COMMISSION

ADJOURN

December

CONSENT AGENDA

GLADSTONE PLANNING COMMISSION MEETING MINUTES of November 17, 2015

Meeting was called to order at 6:32 PM.

ROLL CALL:
The following City officials answered roll call: Commissioner Michele Kremers, Commissioner Malachi de AElfweald, Commissioner Linda Neace, Vice Chairperson Kevin Johnson, and Commissioner Les Poole.

ABSENT:
Commissioner Kirk Stempel and Chairperson Tammy Stempel.

STAFF:
Jolene Morishita, Assistant City Administrator; David Doughman, City Attorney; Clay Glasgow, City Planner.

CONSENT AGENDA:

1. Approval of minutes from September 15, 2015 meeting. *Commissioner Neace made a motion to approve the consent agenda. Motion was seconded by Commissioner Kremers. Motion passed unanimously.*

REGULAR AGENDA:

2. Public Hearing – Z0411-15-SS:
   Subdivision, nine lots for future residential use. Subject property is zoned R7.2 Single Family Residential and is located at 710 E. Kenmore Street, north side of Kenmore between Columbia Avenue and Donna Lynn Way.

   Clay Glasgow went over the staff report. Vice Chairperson Johnson asked if any Commissioner wanted to disqualify themselves and asked if they had visited the site. Commissioner de AElfweald was the only one who had not visited the site. None of the Commissioners wanted to disqualify themselves, nor did any audience members have objections. The applicant did not wish to add anything to the staff report. There was a discussion regarding Fire Department access. Commission de AElfweald asked if lot one would face Donna Lynn Way or Kenmore. The applicant, Casey Cutting, said ideally it would face Donna Lynn Way. Commissioner Poole had some concerns regarding impervious surfaces/drainage. Mr. Cutting assured him that they will meet the City criteria. Commissioner Neace asked if there would be single car garages and Mr. Cutting said that ideally there would be two car garages so parking should not be an issue.

   Public Testimony:

   Proponents: None.

   Opponents: Kurt Thornton – owns property adjacent to the development. He said the applicant does not own the property yet. Mr. Glasgow said that with the owner's consent anyone can act as their agent. Mr. Thornton said that this development will land lock his property and he is not looking forward to the construction process/noise.

Applicant Rebuttal: Mr. Cutting said he has been working on closing the transaction and he should be the owner very soon.

Commissioner Poole made a motion to close the public hearing. Motion was seconded by Commissioner de AElfweald. Motion passed unanimously.

There was discussion regarding noise restrictions/hours, access to and possible development of Mr. Thornton's property, sewer/water lines, lot sizes, etc.

Commissioner de AElfweald made a motion to approve the proposed subdivision Z0411-15-SS with staff recommendations. Motion was seconded by Commissioner Nease. Motion passed unanimously.

BUSINESS FROM THE PLANNING COMMISSION:

Commissioner Poole said there is a lot of concern regarding the marijuana zoning. He wanted to say that everyone should stay informed on the topic.

Commissioner Kremers has concerns regarding livability/sustainability issues related to new developments. Commissioner de AElfweald said that he agrees and they have been looking into those topics with Metro.

Mr. Glasgow said there will be a meeting next month related to the property development adjacent to Walgreens.

ADJOURN:
Commissioner de AElfweald made a motion to adjourn. Motion was seconded by Commissioner Poole. Motion passed unanimously. Meeting adjourned at 7:14 PM.

Minutes approved by the Planning Commission this _____ day of _____, 2015.

_____
Kevin Johnson, Vice Chair

December

REGULAR AGENDA

City of GLADSTONE

City Hall
525 Portland Avenue
Gladstone, OR 97027
(503) 656-5223
FAX: (503) 650-8938
E-Mail: (last name)@ci.gladstone.or.us
Website: www.ci.gladstone.or.us

Municipal Court
525 Portland Avenue
Gladstone, OR 97027
(503) 656-5224 ext. 1
E-Mail: municourt@ci.gladstone.or.us

Police Department
535 Portland Avenue
Gladstone, OR 97027
(503) 655-8211
Website: www.ci.gladstone.or.us

Fire Department
555 Portland Avenue
Gladstone, OR 97027
(503) 557-2776
Website: www.ci.gladstone.or.us

Public Library
135 E. Dartmouth
Gladstone, OR 97027
(503) 656-2411
FAX: (503) 655-2438
E-Mail: qiref@lincc.lib.or.us

Senior Center
1050 Portland Avenue
Gladstone, OR 97027
(503) 655-7701
FAX: (503) 650-4840

City Shop
18595 Portland Avenue
Gladstone, OR 97027
(503) 656-7957
FAX: (503) 722-9078

STAFF REPORT/RECOMMENDATION TO THE

GLADSTONE PLANNING COMMISSION

File: Z0474-15-D, et al

Applicant: Seven Hills Properties

Hearing Date: December 15, 2015

Planning Staff: Clay Glasgow

Report Date: December 8, 2015

I. GENERAL INFORMATION

A. Proposal: This is a proposal for a multiple building/use development: health club (35,000 sq. ft./2-story building); restaurant A (approximately 6,300 square feet); and restaurant B (fast food/drive-thru, approximately 2,700 square feet.) 232 parking spaces are shown as serving the uses. The subject property is located east of and adjacent to the Walgreen's site, on the south side of Arlington Street along the Clackamas River. Approximately five (5) acres in size, the site is within the General Commercial, C-3 zone and currently vacant.

B. Legal Description: T2S, R2E, Section 20CA, Tax Lot 2300

C. Location: no site address; between Arlington Street and the Clackamas River, approximately feet 250 east of SE McLoughlin.

D. Zone: C-3; General Commercial

E. Comprehensive Plan Designation: Commercial

F. Site Information: The subject parcel is approximately 5.10 acres in size and vacant.

G. Vicinity Description: Just east of the McLoughlin commercial corridor, this area along Arlington is in mixed use. The Walgreen's site is adjacent to the west, along McLoughlin. Across Arlington to the north is a mix of residential and commercial in the C-2 Zoning District. Residential zoning and uses are adjacent to the east, with the Clackamas River bounding the property to the south. The subject property itself is vacant, having most recently been the subject of approval for mixed use development. That approval has since expired. Typical urban infrastructure is in place to serve the proposal.

II. FINDINGS

This request is subject to Chapter 17.20, C-3 General Commercial District; Chapter 17.80, Design Review; 17.34, Land Partitions; 17.25, Habitat Conservation Area District; 17.27, WQ Water Quality Resource Area District; 17.29, FM Flood Management District and Division IV, Development Standards of Title 17 of the Gladstone Municipal Code (GMC).

III. SUMMARY

There are six (6) separate applications under consideration with this single development proposal. In the interest of efficiency and ease of reading staff is providing a single staff report for all (as each requires individual action and is appealable on its own merits - decisions will be done separately.)

The proposal involves siting a health club and two separate buildings for restaurants, along with associated parking on a large vacant parcel located just east of Walgreen's, between Arlington Street and the Clackamas River. The uses proposed are allowed outright in the underlying C-3 zone subject to Design Review. Applicant also proposes a re-plat of existing lots of records to include dedication to the city of a strip of land along the river. As the property is along the Clackamas River a variety of overlay regulations come in to play, including those for floodplain, habitat, and water quality. The Planning Commission may recognize this parcel as having been the subject of a previously approved, mixed-use development (Z0665/666-07-C/PUD.) That approval expired. Most recent land use activity in the area is Walgreen's, et. al. Approval(s) for that development as well the site specific approval from 2007 occurred at a time prior to application of the Habitat Conservation and Water Quality overlays. This current set of proposals is subject to the new regulations. Habitat Conservation comes from Metro's Functional Plan at Title 13 – Nature in Neighborhoods, with Water Quality discussed in Title 3 of that Plan. The majority of the site is shown as being "High-Value Habitat" on the HCA maps. That said, a significant amount of fill/grading has occurred which appears to have rendered the property less valuable as habitat. The applicant includes a request to remove the bulk of the high-value HCA designation. This request is key to the remainder of the proposals, and, in fact without removal of

HCA designation as requested the site is likely not developable as proposed. The Water Quality designation is limited to a narrow strip along the river though buffer requirements from that overlay will need to be met. The site is shown as being within the 100-yr floodplain of the Clackamas River. That mapping was done prior to substantial fill being placed on the property. By elevation most of the site is now above the 100-yr floodplain. Applicant provides map modification information from FEMA supporting this fact. A small part of the proposed development is still shown as being within the floodplain, and findings are included to address that issue.

Below are findings and conclusions related to approval criterion for each application type.

III. FINDINGS AND CONCLUSIONS

Planning staff has reviewed this request in reference to the applicable provisions of the GMC. Based upon this review, staff makes the following conclusions:

Design Review

1. Chapter 17.80 of the GMC establishes the requirements for design review. Pursuant to *Subsection* 17.80.021(1), site development in the C-3 zoning district is subject to design review.

   Section 17.80.061 lists submittal requirements for Design Review. The application as submitted satisfies these requirements.

   Section 17.80.100(1) provides for approved design review to remain valid for one year. If construction has not begun by that time, the approval may be renewed once by the Planning Commission for not more than one year.

2. *Chapter 17.20 of the GMC establishes basic requirements for the General Commercial District. Section 17.20.020 identifies uses permitted outright in the District, and includes development as proposed through this application.* This criterion is met.

   Section 17.20.045 establishes screening requirements. The proposal includes landscape and other methods of screening that as shown or as conditioned can satisfy the requirements of this section.

   Section 17.20.050 discusses dimensional standards. Building setbacks and height standards are met with this proposal. Off-street parking meets required setbacks from property lines.
   Staff is able to find applicable standards from Chapter 17.20 of the GMC are met with this proposal.

3. *Chapter 17.44 of the GMC identifies standards for building siting and design.*
These standards apply to all development that is subject to Design Review. Section 17.44.020(1) deals with siting specifically, and requires that, where there are no conflicts with other design standards or requirements in Title 17, to site buildings to maximize solar access where practical, using such techniques as maximizing east-west street length; orienting buildings within twenty degrees of true south as well as maximizing their south-facing dimension; placing higher buildings on the north portion of the site while protecting solar access for adjacent sites, and placing major yard spaces on south side of buildings.

The subject property is large enough to allow arranging buildings and open space areas such that solar access both on and off-site is maximized, and this proposal takes advantage of that fact. Buildings will be oriented in such a way and with windows placed so as maximize solar exposure.

Section 17.44.020(2) requires buildings to have energy efficient designs.

The proposed design includes abundant windows to provide natural lighting. The building will be required to meet the energy codes of the Oregon Structural Specialty Code, which will be evaluated through the building permit process (as designed this will exceed those requirements.)

Section 17.44.020(3) of the GMC addresses compatibility in building design. This subsection encourages the arrangement of structures and use areas to be compatible with adjacent developments and surrounding land uses.

The proposed health club building will be somewhat more massive than typical in this part of Gladstone, though it is designed to be compatible and "blend in" with adjacent developments and surrounding land uses. The mixed-use nature will further this compatibility. The restaurants are located such that pedestrian access is enhanced. See submitted site plans for detail and discussion.

Section 17.44.020(4) of the GMC deals with building materials. That Section requires buildings be constructed using high-image exterior materials and finishes such as masonry, architecturally treated tilt-up concrete, glass, wood or stucco. Screening of roof-mounted equipment is also discussed in this section.

Refer to submitted building elevations for detail and materials samples/colors. As shown and discussed by the applicant this criterion is satisfied.

Section 17.44.020(5) of the GMC establishes lighting standards. 17.44.020(6) establishes illumination level standards. It requires all on-site lighting to be designed, located, shielded ore deflected so as not to shine into off-site structures or impair the vision of the driver of any vehicle.

Site lighting plan is included with the application. Conditions of approval will require that fixtures not create light trespass beyond property lines and will promote dark skies.

Section 17.44.020(7) regarding equipment and facilities establishes that all utility lines shall be placed underground. All roof-mounted fixtures and utility cabinets or similar equipment, which must be installed above ground, shall be visually screened from public view. A condition of approval shall require compliance with this subsection for new utility lines, roof-mounted fixtures, utility cabinets or similar equipment installed aboveground.

Section 17.44.020(8) regarding trash disposal and recycling collection requires new construction to incorporate functional and adequate space for on-site storage and efficient collection of mixed solid waste and source separated recyclables prior to pick-up and removal by haulers.

The proposed plan identifies location and size of recycling/trash enclosures. Staff does not find detail on construction materials. This should be discussed at hearing. A condition of approval will require the applicant submit a letter to the file from the franchise hauler indicating approval of a plan for trash/recline storage and collection.

Section 17.44.024 establishes design standards for nonresidential construction. These provisions require that new, non-residential buildings, with the exception of buildings housing institutional, warehouse or manufacturing uses shall be subject to the following design standards:
(1) Ground floor windows. Ground floor windows shall be required on walls fronting a public street and shall comply with the following standards:
(a) The windows shall cover at least 50% of the length and 25% of the ground level wall area. Ground level wall areas include all exterior wall area up to nine feet above the finished grade. The bottom of required window shall be no more than 4 feet above the adjacent exterior finished grade.

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(b) Required windows shall be windows that allow views into work areas or lobbies, pedestrian entrances or display windows set into the wall. Display cases attached to the outside wall shall not qualify.

Applicant provides response to this criterion in the form of drawings and colors/materials. The two restaurant buildings, along Arlington Street are shown as having an abundance of windows and public spaces, the health club even more so. See submitted building elevations/site plans for detail.

Staff finds the proposal as submitted satisfies applicable provisions from Chapter 17.44 of the GMC, Building Siting and Design.

3. Chapter 17.46 of the GMC identifies landscaping standards and states that these standards are applicable to all developments subject to design review.

Subsection 17.46.020(1) requires a minimum of fifteen percent of the lot area be landscaped.

The submitted site plans show approximately 23% of the property will be in landscaping, with a large portion of this being along the river. The landscape plan itself provides detail on species, etc. Staff is able to find landscape requirements are met/exceeded as shown. A condition of approval is warranted to require submission and approval of a landscape plan showing satisfaction of this subsection.

Subsection 17.46.020(2)(a) requires that a parking or loading area providing ten or more spaces shall be improved with defined landscaped areas totaling no less than ten square feet per parking space.

Met as shown.

Subsection 17.46.020(3) requires that provisions for irrigating planting areas be made where needed. A condition of approval to this effect is warranted.

Subsection 17.46.020(4) requires landscaping to be continuously maintained. This standard can be met with conditions.

Subsection 17.46.020(5) pertains to the planting of trees under overhead utility lines or near sidewalks or curbs.

This can be dealt with as a condition of approval.

Subsection 17.46.020(6) requires that, to the extent possible the natural form of the site shall be preserved. The property has been heavily

filled, e.g. natural form was lost years ago. Only limited additional site grading/filling is proposed at this time.

Subsection 17.46.020(7) pertains land within public road rights-of-way, and requires that land not developed as sidewalks or driveways shall be landscaped and maintained by the abutting property owners. This can be accomplished through conditions of approval.

Subsection 17.46.020(8) notes that street trees may be required of any development.

No street trees are shown as part of this proposal. The Planning Commission should discuss the issue of street trees along Arlington.

4. *Chapter 17.48 of the GMC regulates off-street parking and loading. At time of construction, enlargement or change of use of any structure ore development subject to Design Review, and except as provided for in the C-2 District, off-street parking spaces shall be provided as described in this Chapter unless greater requirements are otherwise established in the Gladstone Code.*

Based on use types/square footage, applicant calculates minimum parking requirement as 181 spaces, with maximum allowed being 319. Proposal shows 232 spaces – meeting requirements.

Section 17.48.040(1)(a) requires parking and loading areas to be paved with asphalt and/or concrete meeting city standards, maintained adequately for all-weather use and so drained as to avoid flow of water across public sidewalks. This standard is met.

Section 17.48.040(1)(c) requires areas for standing and maneuvering vehicle, other than for the off-street parking and storage of truck tractors and /or semi trailers, to be paved. Not applicable.

Section 17.48.040(2)(a) states that required parking spaces must be located within two hundred feet of the building or use they are required to serve. This standard is met.

Section 17.48.040(2)(b) states that required parking shall be provided in the same zoning district or a different zoning district of a more intensive use. Required parking is parking are within the same zoning district.

Section 17.48.040(2)(c) prohibits parking for a commercial or industrial use from being located in a residential district except in the case of a conditional use. As noted above, all parking will be located in the C-2 district.

Section 17.48.040(2)(d) requires groups of more than four parking spaces to be permanently marked and so located and served by driveways that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley. This standard it met as shown.

Section 17.48.040(2)(f),(g) and (i) establish the minimum width of access aisles and the minimum dimensions of parking spaces. The parking lot proposal has the required 24 feet aisle width for 90 degree parking spaces.

Section 17.48.040(2)(h) requires parking areas to be designed to the maximum extent practicable, to avoid large, uninterrupted rows of parking spaces. Not applicable.

Section 17.48.040(3)(b),(c) and (d) establish requirements for loading areas and states, in part – buildings or structure to be built which receive and distribute material or merchandise by truck shall provide and maintain off-street loading berths in sufficient numbers and size to adequately handle the needs of the particular use.

Applicant discusses loading in the submitted materials. It is their contention loading berths are not necessary for the types of uses proposed. This should be discussed at the public hearing.

Section 17.48.050 establishes requirements for bicycle parking. Bicycle parking is proposed as shown and discussed, and meets requirements.

5. *Chapter 17.50 of the GMC establishes the requirements for vehicular and pedestrian circulation. Subsection 17.50.020(1) requires that provisions be made for the least amount of impervious surface necessary to adequately service the type and intensity of proposed land uses within developments as well as providing adequate access for service vehicles.* Based on submitted site plan information, staff is able to find that impervious surface is limited to that required by other sections of the Code and the urban nature of the site. This standard is met.

Subsection 17.50.020(2) requires provisions to be made, when feasible, for a separation of motor vehicular, bicycle and pedestrian traffic. This standard is met.

Subsection 17.50.020(3) requires curbs, associated drainage and sidewalks within the right-of-way or easement for public roads and streets.

Applicant notes sidewalks/curbs will be repaired and/or replaced as required.

Subsection 17.50.020(4) requires provisions to be made to accommodate any increased volume of traffic resulting from the development.

Traffic Impact Analysis has been completed, and is included with the application materials. ODOT has been involved. Refer to traffic analysis for detail. Existing transportation network is expected to continue to function at acceptable levels.

Subsection 17.50.020(5) requires provisions to be made for the special needs of the handicapped. This Subsection is met as shown.

Subsection 17.50.020(6) pertains to pedestrian access. This Subsection is met with the proposal.

Subsection 17.50.020(7) deals with new development requiring full site design review that, when completed, generate an average daily traffic count of 1000 trips or greater. In such case, a transit stop shall be provided. Bus stop(s) exist in the vicinity.

Section 17.50.040, Streets and Roads Generally: Many portions of this Section do not apply. Right-of-way is adequate along Arlington Street, and full improvements are in place or will be as a result of this development.

Applicable portions of this criterion are met or can be conditioned.

6. *Chapter 17.52 of the GMC establishes sign requirements.* Only general information on signage has been presented as of this staff report. The issue should be discussed by the Planning Commission. A condition of approval will require signage to meet requirements from Chapter 17.52.

7. *Chapter 17.54 of the GMC establishes clear vision requirements.* These standards will continue to be met and maintained, as shown on site plan.

8. *Chapter 17.56 of the GMC establishes drainage requirements.* Applicant to work with city regarding retention/detention.

9. *Chapter 17.58 of the GMC establishes standards for grading and fill and requires enforcement of the Uniform Building Code (UBC).* The city contracts with Clackamas County for administration of grading permits. The county enforces its own Excavation and Grading Ordinance in lieu of Chapter 70 of the UBC. Only minor additional grading is proposed. Conditions of approval will require necessary

permits be obtained.

10. *Chapter 17.60 of the GMC establishes requirements for utilities.* All utilities shall be installed consistent with the standards of this Chapter.

Partition, re-plat

1. The site consists of three platted parcels, created through Partition Plat 2008-063. Applicant proposes to adjust the common parcel boundaries so as to result in three (3) developable parcels, one building on each with cross-easements for use of common areas such as parking lot; and create a new "tract" along the river to be dedicated for conservation purposes. These changes are proposed to be accomplished through a re-plat of 2008-063.

2. *Chapter 17.34* of the GMC deals with Partitions, to include re-plats. *Subsection 17.34.020* lists submittal requirements. Met as submitted.

3. *Subsection 17.34.025* discusses requirements of final plat. This can be discussed generally by the PC, though final review and approval will be through the Surveyor's Office.

4. *Subsection 17.34.030* deals with required improvements. This is dealt with through the other applications being considered.

Habitat Conservation Area District

1. A large portion of the property is shown as High Value Habitat on the Metro Title 13 maps. A cursory glance at the site might cause some to question that designation. It has been filled and graded, with essentially no large vegetation remaining. Aside from the toe of the slope along the river, it appears as a mowed field. The bulk of the fill apparently occurred between 2002 and 2004. Applicant provides evidence of permits allowing the work (discussion necessary.)

2. *Chapter 17.25 of the GMC* deals with the Habitat Conservation Area District. Development Review requirements are listed, Exempt Uses, etc. It is the applicants contention those standards do not apply to the bulk of the property. Instead – a mapping error occurred when identifying the HCAD on the subject. That while high-value habitat may exist on a relatively small area of the property, that designation should be limited to a strip along the river as shown and discussed by the applicant.

3. *At subsection 17.25.090, Map Verification* is detailed. It is through this section of the Code the application materials address those criteria relative to correction of mapping errors. As evidence applicant cites aerials photos from April 2002, September 11, 2002 and July 20, 2004. A topographic survey performed June 2, 2015 is used to answer questions in this subsection relative to slopes. The applicant is attempting to show the property was lawfully developed between August 1, 2002 and December 9, 2009. In this case "developed" meaning filled and graded with vegetation removed. The discussion is located at Tab 2 of the large application binder titled "Seven Hills: Arlington Retail. Staff asks the Planning Commission to carefully read through this section of the submitted application. The applicant addresses those criteria relative to Map Verification, and in staff's estimation – successfully so. With the exception of a typo at 4ii (applicant mentions "Existing right of Rays…" Staff is unfamiliar with right of Rays and assumes the intent is right-of-way, instead) staff agrees with applicant's discussion and believes the Map Verification, e.g. map change can be approved as requested. This criterion/criteria is/are satisfied.

4. *Pursuant to subsection 17.25.080*, Applicant submits a second application relative to the HCAD – Construction Management Plan. This application type is required for all development within or near property identified as being within the HCAD District and is in place to protect the resource. Met as submitted.

Water Quality Resource District

1. Title 3 of the Metro Functional Plan deals with water quality. Subject property is along the Clackamas River with mapped Title 3 Resource immediately along the River and identified as Stream Corridor. Title 3 issues are dealt with specifically through Chapter 17.27 of the Gladstone Municipal Code, Water Quality Resource Area District, WQRAD (as a side-note: application of Chapter 17.27 can result in apparent conflicts with Chapter 17.25 (HCA), along with redundancies.) Applicant has submitted responses to applicable criteria in Chapter 17.27.

2. Subsection 17.27.050, Subdivisions and Partitions, require delineating the water quality resource area as a separate tract or part of a larger tract that meets the requirements of this subsection. This application for development proposes to dedicate the WQRD as a Tract to be dedicated to the City. The City has plans for a pedestrian path along the Clackamas, and, with this dedication along with that acquired from the Walgreen's property is moving towards that end.

3. Site development is shown as occurring outside the area mapped as WQRAD. "Vegetated Corridor" is required, with width based on slope adjacent to protected feature. Applicant states proposed development will not impact the vegetated corridor due to a buffer of 100' from the ordinary high water mark (OHWM). Applicant goes on to state that as per Table 1 in GMC subsection 17.27.20 the 100' from the OHWM covers the "distance from starting point of measurement to break in 25 percent slope plus 50 feet." Planning Commission may want to discuss this both to understand the logic of the applicant, as well as understand the reasoning behind the buffer requirements.

Flood Management Area District

1. Chapter 17.29 of the GMC applies to the floodplain. The entire property is mapped as being with the jurisdictional 100'year floodplain of the Clackamas River. Elevation of approximately 48 feet above mean sea level is considered floodplain at this location. Applicant provides a "Letter of Map Revision (LOMR)" from FEMA, dated October 21, 2008. The fill placed on the property has resulted in most of the site being raised above 48 feet msl and therefore above the jurisdictional floodplain. Applicant notes that, at this time there is ongoing investigation to the exact boundary dealt with in the LOMR. For purpose of this proposal it is being assumed that portion of the site shown as supporting the SW corner of the fitness building lies below 48 feet and therefore within the floodplain.

   Applicant provides responses to applicable criteria from Chapter 17.29 of the GMC. All habitable areas of buildings will be elevated above the 100-yr flood elevation as required in 17.29. Foundations, etc. will be flood-proofed as required. Balanced cut and fill will ensure no impact to upstream floodplain elevations. Elevation certificates will be provideed prior to and after construction.

   Applicable criteria from Chapter 17.29 will be met as submitted and conditioned.

REQUEST FOR COMMENTS:

City of Gladstone Public Works, Gladstone Fire, ODOT, Tri-Cities

RESPONSES RECEIVED:

No comments received as of this report.

IV. RECOMMENDATION

The Planning Commission is authorized to approve applications pursuant to *Subsection 17.94.060(2)(c) of the GMC.* Staff staff recommends the Planning Commission approve these applications for Design Review, Partition re-plat, HCAD Map Verification, Construction Management Plan, WQRAD and FM, based on the submitted application materials, subject to the following conditions:

1. This approval (with exception of map verification) shall remain valid for one year following the date of approval. If construction has not begun by that date, this approval shall expire unless the Planning Commission pursuant to Section 17.80.100 of the GMC grants an extension.

2. The applicant shall obtain required permits from Clackamas County. The applicant shall comply with the requirements of the permits.

3. The applicant shall obtain a grading permit, if required, from Clackamas County for any proposed grading and fill. The applicant shall comply with the requirements of the permit.

4. New mechanical equipment and garbage receptacles shall be screened as required by the GMC.

5. On-site lighting shall comply with Subsections 17.44.020(4) and (5) of the GMC, including compliance with IES standards. "Dark sky" fixtures shall be used to the extent possible. Developer to submit final lighting plan showing compliance prior to issuance of final occupancy permit.

6. New utility lines shall be placed underground unless prohibited by the utility service provider. New roof-mounted fixtures and utility cabinets or similar equipment shall be visually screened from public view as required by GMC Subsection 17.44.020(6).

7. The applicant shall submit a letter to the city from the franchise hauler indicating approval of a plan for trash/recycling storage and collection. Alternatively, the applicant may submit calculations demonstrating

compliance with the minimum standards method described in GMC Subsection 17.44.020(8). Trash/recycling enclosure to be fully enclosed and compatible with design of main building.

8. The applicant shall submit calculations demonstrating compliance with the window to wall provisions of Subsection 17.44.024.

9. The landscaped area shall be provided with an automatic irrigation system.

10. The proposed landscaping shall be installed prior to occupancy, emphasize native species, and be continuously maintained. Landscape maintenance shall be the responsibility of the owner.

11. All signs shall meet the provisions of Subsection 17.52 of the GMC.

12. Paving shall comply with city standards. Plans shall be submitted to the city for approval prior to construction.

13. This approval is subject to the development complying with the provisions of the Americans with Disabilities Act (ADA), including provisions for curb ramps.

14. Installation of curbs and sidewalks, if necessary, shall be constructed to city standards.

15. Construction of storm drainage improvements associated with the development shall be consistent with city standards. Storm water detention area to meet or exceed NPDES regulations and be reviewed by the City engineer. Compliance with the drainage requirements of the plumbing code administered by Clackamas County.

16. Water and sanitary sewer improvements shall be constructed to City and Tri-City Service District standards, respectively, and that plans are submitted to the City for approval prior to construction and that utilities be developed in accordance with the requirements of Chapter 17.60.

17. Applicant to submit letter to the city from the Fire Department indication all requirements from that agency have been satisfied.

18. Final certificate of occupancy shall not be granted until all conditions of the design review approval have been met.

19. Any changes in the approved design review plans shall be submitted and approved prior to execution. Any departure from the approved design review may cause revocation of building permits or denial of the final certificate of occupancy.

20. Parking minimums and maximums shall be met as calculated.

21. Prior to issuance of a final occupancy permit, required improvements shall be installed and existing streets and other public facilities damaged during development shall be repaired or the developer shall file a financial guarantee of performance in a form acceptable to the city attorney. The financial

guarantee must be valid until the improvements are complete or the damages repaired, as determined by the city.

22. No-rise modeling and no-rise certification required prior to development.

23. The project is subject to all required permits and plan reviews.

24 If required by Clackamas County's Excavation and Grading Ordinance, the applicant shall obtain a grading permit from the county for cut and fill on the subject property.

25. All utilities shall be developed pursuant to Chapter 17.60 of the GMC.

26. Prior to site development or construction, the designer shall submit updated grading plans and/or facility design drawings and section plans reflecting final design information related to the elevations of floors, construction elements, electrical equipment, and machinery.

27. Prior to site development or construction, the designer/engineer shall submit a "no-rise" certification based on the final design.

28. Prior to finalization of building permits, the designer/engineer shall prepare a final, certified FEMA elevation certificate based on as-built conditions.

29. If floodproofing of mechanical equipment is required, prior to finalization of building permits, the designer/engineer shall prepare a floodproofing certificate for required mechanical and electrical elements.

30. Prior to site development or construction, all federal and state permits shall be obtained and provided to the County and/or City.

31. The development shall, along with attendant utility and sanitary facilities, comply with the floodproofing requirements discussed in FEMA Technical Bulletin 3-93, *Non-Residential Floodproofing — Requirements & Certification.*

32. Development to comply with all other applicable standards in GMC Chapter 17.29 and Clackamas County Zoning Ordinance Section 703, as discussed through the submitted application materials.

33. Final certificate of occupancy shall not be granted until all conditions of the design review approval have been met.

34. Any development that is approved within the HCA through this decision shall not result in the removal of the developed area(s) from the HCA and shall not change the applicable HCA category(s).

35. Mitigation Standards: The mitigation standards for the development within the HCA that is proposed pursuant to Subsection 17.25.10(B) shall be as set forth in that section and as detailed in the submitted mitigation plan.

36. Prior to final Planning approval of the proposed development, the applicant shall obtain approval of an Erosion Control Plan from applicable EPSC authority.

37. Orange construction fencing (i.e. safety fencing, snow fencing, or a comparable product) shall be installed on or outside the boundary of the HCA, except where the drip line of a protected tree extends outside the HCA, in which case the drip line shall be included inside the fencing. This requirement may be modified or waived if:

    a. Disturbance of the HCA is authorized pursuant to Subsection 17.25.10, in which case the fencing shall be installed in such a manner as to protect the area of the HCA not authorized for disturbance; or

    b. The HCA is already lawfully developed, in which case the fencing shall be installed in such a manner as to protect any water resource that is the basis for the HCA designation and any area of the HCA where naturalized vegetative cover exists.

    i. Trees in the HCA shall not be used as anchors for stabilizing construction equipment.

    ii. Native soils disturbed during development shall be conserved on the subject property.

    iii. Development shall not commence until the EPSC measures and fencing required pursuant to Subsections 17.25.08(A) and (B) are in place.

    iv. Compliance with the Construction Management Plan shall be maintained until the development is complete.

38. Erosion prevention and sediment control (EPSC) measures are required and shall comply with the standards of the EPSC regulatory authority.

39. This HCA Map Verification shall be valid for five (5) years from the date of the final written decision, except If development lawfully commences within the five-year time period, the HCA Map Verification shall remain valid until the development is complete or has been abandoned. Development will be considered to be abandoned if building or grading permits authorizing the development have lapsed or work not requiring a building or grading permit has been discontinued for more than one year.

40. Native soils disturbed during development shall be conserved on the subject property to the extent practicable, as discussed at 17.25.080.D, in the Findings and Conclusions Section of this Decision.

41. Compliance with the CMP shall be maintained until the development is complete.

42. Development shall not occur until the EPSC and required fencing are in place. The contractor shall comply with the CMP until development is complete.

43. The approval of the application granted by this decision concerns only the applicable criteria for this decision. The decision does not include any conclusions by the county concerning whether the activities allowed will or will not come in conflict with the provisions of the federal Endangered Species Act (ESA). This decision should not be construed to or represented to authorize any activity that will conflict with or violate the ESA. It is the applicant, in coordination if necessary with the federal agencies responsibility for the administration and enforcement of the ESA, who must ensure that the approved activities are designed, constructed, operated and maintained in a manner that complies with the ESA

44. Any changes in the approved plans shall be submitted and approved prior to implementation. Any departure from the approved design review may cause revocation of building permits or denial of the final certificate of occupancy.

Owner

Seven Hills Properties LLC

Contact: Tom Rocca
88 Perry Street
San Francisco, CA 94107

Phone (415)247-7377

Applicant

Baysinger Partners Architecture

Contact: William M. Ruecker
Jennifer L. Rinkus
1006 SE Grand Avenue #300
Portland, Oregon 97214

Phone (503) 546-1600

Land Use Applications

Design Review – Type II
Partition Replat
HCA Map Verification
Construction Management Plan
WQRD Development Permit
Floodplain Development Permit

SEVEN HILLS PROPERTIES - ARLINGTON RETAIL,

BAYSINGER PARTNERS ARCHITECTURE PC
1006 SE Grand Ave., Suite 300, Portland, OR 97214 503-546-1600

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SEVEN HILLS PROPERTIES - ARLINGTON RETAIL, GLADSTONE, OR

BAYSINGER PARTNERS ARCHITECTURE PC
1006 SE Grand Ave., Suite 300, Portland, OR 97214 503-546-1600

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BAYSINGER PARTNERS ARCHITECTURE PC
1006 SE Grand Ave., Suite 300, Portland, OR 97214 503-546-1600

BAYSINGER PARTNERS

November 20, 2015

City of Gladstone/Clackamas County
Planning and Zoning Division
Department of Transportation and Development
150 Beavercreek Road
Oregon City, OR 97045

RE: Design Review, Habitat Conservation Area (HCA) Map Verification, Construction Management Plan, Water Quality Resource District (WQRD) Development Permit, Floodplain Development Permit and Partition Replat;
Lots 00600, 00601 and 00602, Tax Map 22E20;
Seven Hills Properties, LLC (contract purchaser);
Parker Landing, LLC (owner)

Dear Clay,

Please find attached, information in conformance with the City and County's Design Review, HCA Map Verification, Construction Management Plan, WQRD Development Permit, Floodplain Development Permit and Partition Replat submittal requirements. These applications relate to Seven Hills Properties' proposal to develop lots 00600, 00601 and 00602 (tax map 22E20).

The proposed project site is located within the C3 (General Commercial) zoning district. The sites total approximately 5.10 acres in area (before dedication of the river buffer) and has its primary frontage on West Arlington Street and a small frontage (approximately 27 lineal feet) on Barton Avenue. The project site does not include the parcel at the intersection hard corner of Arlington and Barton Avenue. Abutting parcels to the west and northeast are zoned C3. Parcels north across the West Arlington right-of-way are zoned C2 and abutting parcels to the southeast area zoned R5.

The site is currently shown as within the HCA boundary, however, work under a 2002 grading permit removed vegetation and developed the site. In light of that work, this submittal includes a HCA Map Verification application. The application requesting that the HCA boundary be reevaluated and all of the development site, except for the first 100 feet (in depth) along the river frontage, be removed from the HCA boundary and map as is allowed by Gladstone Zoning Code Sections 17.25.090.A.3 and D.

Baysinger Partners Architecture

1006 SE Grand Ave., Suite 300
Portland, OR 97214
Phone 503-546-1600
Fax 503-546-1601
www.BaysingerPartners.com

A Construction Management Plan is included with this submittal to demonstrate that all proposed work will be outside of the new HCA boundary and that the remaining HCA area on the adjacent river buffer parcel will remain without impact.

A Partition Replat is also included with this submittal. The replat will divide Lot 602 into two parcels creating an approximately 111 feet wide parcel for the full length of the river frontage. This parcel will then be transferred to City ownership. The replat will also reconfigure the interior lot lines between the remaining Lot 602, 601 and 600 to ensure that the proposed buildings associated with the Design Review application do not cross any lot lines.

The proposed development includes construction only within that area of the site to be removed from the HCA boundary per the above HCA Map Verification. Construction will include an approximately 35,000 square feet 2-story building and two pad buildings approximately 2,800 and 6,300 square feet in area. Site work associated with the project will include approximately 232 vehicular parking stalls, ADA compliant walkways and code compliant landscaping. At this time there is a confirmed health club tenant for the 35,000 square foot building; however, the two pad buildings do not have confirmed tenants, but are anticipated to be restaurant users.

The development will share the existing SE McLoughlin and West Arlington accesses on the abutting western parcels; two of which are under common ownership with this development. A new full turn access on the proposed project site will be installed approximately midway along the West Arlington right-of-way. This access will reside fully on the reconfigured Lot 602 and provide shared access to both Lot 600 and 601 to consolidate the number of accesses to West Arlington.

The majority of the work proposed will occur above the 48 foot flood elevation level with only a small portion of parking along the south property line and the southwest corner of the health club building encroaching into the floodplain. All work within the floodplain has been accounted for through cut and fill balancing and installation of underground water storage chambers with arched openings designed by certified civil engineers to ensure that the flood level is not negatively impacted. A Floodplain Development Permit application is included with this submittal for that work.

In addition to the Floodplain Overlay and HCA Overlay the site is within the Water Quality Resource District Overlay. This area is limited to the ordinary high water line (OHW) of the abutting Clackamas River. After completion of the included Replat the OHW line will reside fully within the created river buffer parcel and will not be impacted by the proposed development as there is no development proposed within the buffer parcel. A WQRD Development Permit is being applied for to demonstrate the proposed work complies with WQRD requirements.

Lastly, this submittal includes a Design Review application. As previously mentioned, there are no confirmed tenants for either pad building; however, basic elevations and floor plans are being submitted for both buildings. This approach allows us to show the intent of the fully developed final site while allowing future pad building tenants to modify the design through an Administrative Modification to suit their individual needs.

The project will construct all site work and the health club building first with pad building construction to follow. The proposed health club building will be constructed of painted concrete with metal panels and awnings and include ample glazing and articulation. The North façade will house the main entry and bike parking. The South façade will face the river and has been designed to maximize views of the river

frontage. Large windows will daylight the swimming pool and work out areas and optimize passive solar heating in pool area. Operable windows will be provided where feasible to allow natural breezes into the pool and workout areas.

We trust that this submittal will be to your satisfaction and we look forward to your informed response.

Sincerely,

Jennifer L. Rinkus, Planner
Baysinger Partners Architecture
503.546.1623 (P) / 503.998.6402 (C)

cc: Tom Rocca, Seven Hills Properties
File

Chapter 17.20 C-3—GENERAL COMMERCIAL DISTRICT

17.20.020 Uses allowed outright.

In a C-3 zoning district, the following uses and their accessory uses are allowed outright. Outside or open storage shall be an allowed accessory use.

(4) Eating or drinking establishment.
(9) Personal and business service establishment such as a barber shop, tailoring shop, printing shop, laundry and dry cleaning, sales agency or photography studio.
(12) Retail trade.

RESPONSE: The proposed project is for the construction of three commercial buildings. It is anticipated that the site will contain a health club use (35,000 SF building), fast food restaurant, sit-down dining restaurant (either high turnover or quality) and possibly retail uses. All of the proposed uses are allowed. This criterion is therefore met.

17.20.045 Screening.

The following screening standards shall apply:

(1) Off-street parking and loading areas and business activities, such as service, repair, processing, storage and merchandise display, that are conducted outside of a wholly enclosed building, shall be screened from abutting properties where such properties are in a residential zoning district and from abutting unimproved public street rights-of-way where property on the opposite side of the unimproved right-of-way is in a residential zoning district.

RESPONSE: The proposed project site abuts residentially zoned land to the east. Loading for the restaurant pads is anticipated to occur at off hours and utilize adjacent parking. These areas are setback from and screening from the residentially zoned parcel to the east. Loading is not provided for the health club use building (35,000 square feet) as all deliveries, after initial set up of equipment, is anticipated to occur by small delivery van which can utilize a standard parking stall. This criterion is therefore met.

(2) Business activities, such as service, repair, processing, storage and merchandise display, that are conducted outside of a wholly enclosed building, shall be screened from abutting properties where such properties are in a C-1 or C-2 zoning district and from abutting unimproved public street rights-of-way where property on the opposite side of the unimproved right- of-way is in a C-l or C-2 zoning district.

RESPONSE: The project is zoned C-3 and abuts both C-3 and R-5 properties. Some C-2 zoned parcels are north across the SE Arlington right-of-way which has been improved. This criterion therefore does not apply.

(3) Storage, with the exception of merchandise display, outside of a wholly enclosed building shall be screened from abutting improved public street rights-of-way. Off-street parking and loading areas for customer vehicles, employee vehicles and vehicles for sale are not required to be screened from improved public street rights-of-way. However, off-street parking and loading areas for other types of vehicle storage (e.g. towed vehicles, recreational vehicles being stored as a service) shall be screened from abutting improved public street rights-of-way.

RESPONSE: The proposed project does not include outdoor storage; therefore, this criterion does not apply.

17.20.050 Dimensional standards.

Except as provided in GMC Chapters 17.38 (planned unit development), Chapter 17.72 (variances) and Chapter 17.76 (exceptions), the following dimensional standards shall apply in a C-3 zoning district:

(1) Front Setbacks. There shall be no minimum front setback requirement except when a front lot line abuts a residential zoning district or abuts a street where property on the opposite side of the street is in a residential zoning district, in which cases the minimum front setback shall be twenty feet (20′).

RESPONSE: The front property line for the proposed project is the north lot line abutting the SE Arlington right-of-way. Parcels across the right-of-way are zoned C2 and are therefore not residential. The minimum setback for the site is zero.

(2) Street Side Setbacks. There shall be no minimum street side setback requirement except when a street side lot line abuts a residential zoning district or abuts a street where property on the opposite side of the street is in a residential zoning district, in which cases the minimum street side setback shall be twenty feet (20′).

RESPONSE: The project abuts residentially zoned land, R-5, along the east property line. All side yards, except the east therefore have a minimum setback of zero. The east property line has a setback of 20 feet. The included site plan holds all buildings a minimum of 20 feet from the east property line. This criterion is therefore met.

(3) Side and Rear Setbacks. There shall be no minimum side or rear setback requirements.

RESPONSE: This criterion is met as there are no minimum side or rear setbacks.

(4) Off-Street Parking. The boundary of any area developed or intended for off-street parking shall be located a minimum of five feet (5′) from all property lines.

RESPONSE: All parking areas have been provided with a minimum five (5) foot setback from all property lines.

(5) Architectural Features. Architectural features such as cornices, eaves, gutters, chimneys and flues may project a maximum of two feet (2′) into a required setback area.

RESPONSE: At this time there are no anticipated projects into a required setback.

(6) Building Height. The maximum building height shall be thirty-five feet (35′). This restriction may be varied as follows:
   (a) Maximum building height may be increased by one (1) story if the building is provided with an approved automatic sprinkler system throughout as provided in Section 506 of the Oregon Structural Specialty Code or its successor; vertical projections such as chimneys, spires, domes, elevator shaft housings, towers, aerials, flagpoles and similar objects not used for human occupancy are exempt from the maximum building height standard;

(b) Maximum building height may be increased if the city fire department reports that it possesses sufficient fire-fighting capability to provide emergency response to a structure of the height proposed.

RESPONSE: All pad buildings proposed are single story. The 35,000 square foot fitness use will be two story; however the maximum height of the building is 35 feet high. This criterion is met as all portions of the buildings proposed are less than 35 feet in height.

(6) Equipment Setbacks. There shall be no minimum setback requirements for central air conditioners, heat pumps and similar equipment except when a lot line abuts a residential zoning district, in which case the minimum setback requirement from the lot line abutting the residential zoning district shall be ten feet (10').

RESPONSE: Any equipment located on the eastern façade of the fitness building will be located so as to maintain a minimum 10 feet separation from the abutting residential parcel. This criterion will therefore be met.

Chapter 17.42 GENERAL PROVISIONS

17.42.020 Use of public right-of-way.

Use of public right-of-way for the sale, display or storage of goods and off-street parking is prohibited on interior side of curbs, however, this requirement may be waived upon City Council approval.

RESPONSE: The proposed project does not include sale, display, storage or off-street parking within the public right-of-way; therefore, this criterion is met.

17.42.030 Improvements.

Improvements installed by a developer, either as a requirement or at his or her option, shall conform to the standards of this title, GMC Chapter 12.02 (street excavation requirements) and to any supplemental design and construction specifications adopted by the city for such improvements. Improvements shall be installed in accordance with the following procedure:

(1) Improvement work shall not begin until plans have been checked for adequacy and approved by the city.
   (a) To the extent necessary for evaluation of the proposal, the plans may be required before land use approval is issued.
   (b) Plans shall be prepared in accordance with the requirements of the city.

RESPONSE: All required plans have been submitted for land use review along with this narrative. Adequate plans, as required by the City for their review, will be submitted for permit issuance as well. This criterion is therefore met.

(2) Improvement work shall not begin until the city has been notified, and if work has been discontinued for any reason, it shall not be resumed until the city has been notified.

RESPONSE: All appropriate and required notifications will be given at the start or continuance of work. This criterion will therefore be met.

(3) Improvements shall be constructed under the inspection and to the satisfaction of the city.
   (a) The city may require changes in typical sections and details in the public interest if unusual conditions arise during construction to warrant the change.

RESPONSE: All required inspections will be requested; therefore, this criterion will be met.

hapter 17.44 BUILDING SITING AND DESIGN

17.44.020 General standards.

Building siting and design standards are as follows:

(1) Siting. Where there are no conflicts with other design standards or requirements in this Title, site buildings to maximize solar access where practical, using such techniques as:

(a) Maximizing east-west street length so that principal building façades will face south;

RESPONSE: The site has been designed so that all principal building facades (longest) face south with the east-west length maximized. All buildings have their longest dimensions on the south and north facades. This criterion is therefore met.

(b) Orienting buildings within twenty degrees of true south as well as maximizing their south-facing dimension;

RESPONSE: The proposed project site's south property line is adjacent to the Clackamas River, and provides beautiful vistas from within the site. All buildings have their east-west lengths maximized as required by subsection (a) above. To maximize river views and site area for safety and circulation the south facades of the building have been aligned with the river. This places the south facades approximately 40 degrees off of true south; however, still provides ample daylighting and solar access due to the layout of the site. The project has been designed to maximize the south facing building facades while retaining vistas of site adjacent natural feature. This criterion is met as all buildings have had their south façade maximized and the orientation, while more than 20 degrees off true south, still provides ample solar access.

(c) Placing higher buildings on the north portion of the site, while protecting solar access for adjacent sites;

RESPONSE: The proposed project places the two story building along the south lot line with the single story pad buildings abutting the north property line and public right-of-way. While the design does not place the higher building on the north portion of the site the north-south depth of the site ensures that the two story building will not negatively impact the solar access of the pad buildings. This criterion is met as the intent of the code is still provided.

(d) Placing major yard spaces on south side of buildings.

RESPONSE: All building have major yard spaces on their south sides. The pad building have generous open space along the south façade in the form of walkways, landscaping and parking which allows for ample solar access. The two story fitness building have both landscaping and a large 100 foot river buffer along its south façade. This criterion is therefore met.

(2) Energy Efficient Design. Where there are no conflicts with other design standards or requirements in this Title, design buildings that are conducive to energy efficiency and conservation, using techniques including, but not limited to, those listed below which are most appropriate to the development:

(a) Concentrate window areas on the south side (within twenty degrees of true south) of buildings where there is good southern exposure, and provide overhangs, balconies, or other shading devices to prevent excessive summer heat gains;

RESPONSE: All three proposed buildings are oriented along an East West access to allow generous windows on south facing elevations with overhangs and awnings to control summer heat gain. Large windows are also placed on north side for increased daylighting. Windows on east and west side are minimized to avoid unwanted heat gain and glare.

(b) Use architectural features, shapes or buildings, fences, natural landforms, berms and vegetation to catch and direct summer breezes for natural cooling and minimize effects of winter winds;

RESPONSE: The East West orientation of the pad buildings with their main entries on the south facades helps block eastern winds in winter months. Open site plan orientation allows gentle summer breezes to flow thru campus and to cool outdoor seating areas and balconies.

(c) Provide skylights or clerestory windows to provide natural lighting and/or solar heating of interior spaces.

RESPONSE: Large clearstory windows capture daylight for natural lighting in all three structures. Skylights are used in the fitness building to provide added daylight; however, they are not used in the restaurant buildings to avoid unwanted heat gain as the building will need more cooling than heating due to their occupancies as restaurants. This criterion is therefore met as skylights and clerestory windows are provided to enhance interior spaces with natural light.

(3) Compatibility. Arrange structures and use areas to be compatible with adjacent developments and surrounding land uses, considering the following design and siting techniques:

(a) Locate and design structures to protect scenic views or vistas from adjacent properties and public thoroughfares. Setbacks, building height and bulk should be considered;

RESPONSE: The best view from this property and from adjoining properties is the river views. The siting of the athletic club along the river, centered in our site, preserves the adjacent property views in their entirety while offering outstanding views to those people working out in club. Views from Arlington and pads are maintained by limiting total length of building along the river to less than a third of the frontage allowing scenic vistas of the river on either side. This criterion is therefore met as the buildings have been located and designed to protect scenic views not only without our development, but, of those abutting the project.

(b) Design structures to provide visual order and avoid monotony in layout and design;

RESPONSE: Two pad building are placed along the Arlington Street frontage to help reinforce the urban fabric of Gladstone. The fitness use along river offers an edge to the river and helps create a nice space between the buildings for a parking field featuring extensive landscaping and trees. Each building will support a campus feeling with shared material palette and colors while maintaining each buildings identity within the whole. This criterion is met the site and building have been

designed to provide order through an efficient layout and use of mutual materials in their construction.

(c) Orient major service activity areas (e.g., loading and delivery areas) of the proposed project away from existing residences;

RESPONSE: The only residence adjoining the site is to the East and is a single family home. The development is placed as far from the existing house as was feasible. The athletic club use will have a very small need for delivery and loading. Loading will occur mostly at move in and then will be limited to typical delivery of athletic equipment and supplies. There is no dedicated loading area; however, the area near the waste enclosure that could be used for quick deliveries is located more than 25 feet away from the residential zone. The loading, trash and recycling areas for the pad buildings are well removed from the residential zone and the properties across Arlington by opaque enclosures and landscape materials.

(d) Provide opaque enclosures and gates for all refuse storage areas;

RESPONSE: All trash and refuse areas will be screened with opaque enclosures and gates. The enclosure of each building will be constructed of materials similar to that used on the building it serves. Refer to the included elevations for illustration of the enclosures.

(e) Screen mechanical equipment, except solar collection apparatus, from view or place such equipment in locations where it will not be viewed by the public. Screening shall be accomplished by the use of a sight-obscuring fence or hedge, a landscaped earth berm, building placement or other design techniques;

RESPONSE: All rooftop mechanical will be screened by the building parapets. Site located utilities will be placed to the extent possible to ensure views from the public are limited. Where views cannot be blocked entirely by location alone approved screening methods such as fencing and landscaping will be used to ensure views of equipment are blocked from the public areas. This criterion will therefore be met.

(f) Buffering and/or screening shall be used to mitigate adverse visual impacts, dust, noise and pollution, and to provide for compatibility between dissimilar adjoining uses. Special consideration will be given to the buffering, screening and siting of commercial and industrial uses to ensure that noise and odors are not detectable to normal sensory perception on adjacent residential properties. All development shall comply with GMC Chapter 8.12 (noise control).

RESPONSE: Setback areas which exceed code required minimums are provided for parking, waste enclosure and building area adjacent to the east lot line which abuts a residential zone. Ample landscaping with a mix of trees, both deciduous and evergreen, along with shrubs is provided within those setbacks. Both the separation distance and the landscaping proposed will serve to provide appropriate and adequate buffering and screening between the proposed commercial uses and the abutting existing residential use. Refer to the included site plan and landscape plans. This criterion is therefore met.

(4) Building Materials. Buildings shall be constructed using high-image exterior materials and finishes such as masonry, architecturally treated tilt-up concrete, glass, wood or stucco. Buildings shall not be constructed with metal siding material, except as approved by the design review committee for specific high-image materials, except for:
(a) Canopies, awnings, screening for roof-mounted fixtures, or other architectural features:
(b) Utility equipment cabinets:
(c) Structures no greater than two hundred (200) square feet in floor area and ten (10) feet in height: and,
(d) Buildings, the portions of buildings that are not visible from a road or adjacent property.

RESPONSE: The proposed pad buildings will be constructed of lap siding, brick and stucco while the fitness building will be constructed of concrete. All buildings will include ample glazing and metal canopies and/or awnings. This criterion is met as all buildings will be constructed using high-image exterior materials and finishes that are durable and long lasting.

(5) Lighting. Adequate exterior lighting shall be provided to protect public safety and shall be deflected so as not to shine on a lot in a residential district.

RESPONSE: Lighting is being provided for the site and is shown in the attached lighting plan and photometric plan. All lighting has been designed so has to be shielded or located to not shine on the adjacent residential lots along the east property line. This criterion is therefore met.

(6) On-site Lighting. All on-site lighting shall be designed, located, shielded, or deflected so as not to shine into off-site structures or impair the vision of the driver of any vehicle. When required, engineered site lighting plans shall be developed consistent with Illuminating Engineering Standards (IES) including, but not limited to, average maintained illumination and maximum to minimum ratios. A master plan for on-site lighting shall include the design, height, and location of all proposed exterior lights, including:
(a) Parking and loading area lighting;
(b) Pedestrian walkway lighting;
(c) Internal access road lighting;
(d) Lighting of public entrances into buildings;
(e) Flood lights illuminating buildings or significant natural features.

RESPONSE: All lighting has been designed and located, shielded or deflected so as to minimize off-site light contamination. A photometric plan demonstrating lighting levels at the property line has been including with this submittal. This criterion is therefore met.

(7) Equipment and Facilities. All utility lines shall be placed underground. All roof-mounted fixtures and utility cabinets or similar equipment which must be installed above ground shall be visually screened from public view.

RESPONSE: All new utilities are proposed to be placed underground. All rooftop mechanical has been screened from view by the building parapets. This criterion is therefore met.

(8) Trash Disposal and Recycling Collection. In addition to the preceding standards, new construction requiring full site plan review shall incorporate functional and adequate space for on-site storage and efficient collection of mixed solid waste and source separated recyclables prior to pick-up and removal by haulers.

(a) Minimum storage area for trash and recyclables shall be established by one of the following methods: minimum standards method or franchise hauler review method.
  (A) Franchise Hauler Review Method. The applicant shall submit plans for storage and collection of solid waste and recyclables that are acceptable to the city's franchise solid waste hauler; acceptance may be indicated on the site plan and/or by separate attachment; or
  (B) Minimum Standards Method. The applicant shall submit plans for storage of solid waste and recyclables in accordance with the following:
    (ii) Nonresidential developments shall provide a minimum storage area of ten (10) square feet plus:
      (aa) office - 4 square feet /1,000 square feet gross floor area (GFA)
      (bb) retail - 10 square feet /1,000 square feet GFA
      (cc) wholesale/warehouse/manufacturing - 6 square feet /1,000 square feet GFA
      (dd) educational & institutional - 4 square feet / 1,000 square feet GFA
      (ee) Other - 4 square feet /1,000 square feet GFA

RESPONSE: The project includes three buildings. Per the Minimum Standards Method the following is required and provided for the proposed development:

- **Restaurant: 6,300 sf requires 35.2 square feet of waste enclosure (6.3*4 = 25.2 +10 = 32.5 sf). The proposed development includes a 144 sf waste enclosure for this building**
- **Fast Food: 2,700 sf requires 20.8 sf (2.8 *4 = 11.2 + 10 = 20.8 sf). The proposed development includes a 144 sf waste enclosure for this building.**
- **Fitness: 35,000 sf requires 150 sf of waste enclosure (35 * 4 = 140 +10 = 150 sf). The proposed development includes a 220 sf waste enclosure for this building.**

This criterion is met as all proposed buildings are provided with a waste enclosure that exceeds the minimum area required by the minimum standards method.

  (D) The specific requirements shall meet the Uniform Fire Code and are based on an assumed storage height of four feet (4′) for solid waste/recyclables. Vertical storage higher than four feet (4′) but not higher than seven feet (7′) may be used to accommodate the same volume of storage in a reduced floor space.

RESPONSE: All enclosures have been designed to meet the Fire Code and do not provide vertical storage higher than seven (7) feet. This criterion is therefore met.

17.44.024 Nonresidential design standards.

New nonresidential buildings, with the exception of buildings housing institutional, warehouse or manufacturing uses, shall be subject to the following design standards:

(1) Ground Floor Windows. Ground floor windows shall be required on walls fronting a public street and shall comply with the following standards:
  (a) The windows shall cover at least fifty percent (50%) of the length and twenty-five percent of the ground level wall area. Ground level wall areas include all exterior wall areas up to nine feet (9′) above the finished grade. The bottom of required windows shall be no more than four feet (4′) above the adjacent exterior finished grade.

RESPONSE: The project has three buildings whose north facades face West Arlington Street. The total length of frontage facing the street is approximately 386.5 lineal feet requiring a minimum window length of 193.5 lineal feet and a minimum window

area of 869.625 square feet. The buildings will provide approximately 193.5 lineal feet and 1,199 square feet of windows on the north facades. This criterion is met as the minimum 50% of length and 25% of area of the street facing facades will be comprised of windows.

(b) Required windows shall be windows that allow views into work areas or lobbies, pedestrian entrances or display windows set into the wall. Display cases attached to the outside wall shall not qualify.

RESPONSE: All windows will be clear and provide views into the working areas of the building along with the entrance area. This criterion is therefore met.

Chapter 17.46 LANDSCAPING

17.46.020 Standards.

Landscaping requirements shall be as follows:

(1) Minimum Requirement. A minimum of fifteen percent (15%) of the lot area shall be landscaped, except when a greater percentage is required elsewhere in this title.

RESPONSE: The proposed project site totals approximately 175,390 square feet in area excluding the river buffer parcel. The required landscaping is therefore 26,310 square feet in area. The project will provide approximately 39,460 square feet (23%) within the bounds of the development lots (not including river buffer parcel). This criterion is therefore met.

(2) Parking and Loading Areas. The following landscape requirements shall apply to off-street parking and loading areas:

(a) An off-street parking and loading area providing ten (10) or more parking spaces shall be improved with defined landscaped areas totaling no less than ten square feet per parking space;

RESPONSE: The proposed project includes 232 vehicular parking stalls requiring a minimum of 2,320 square feet of landscaping. The project will provide 7,710 square feet of landscaping dispersed throughout the parking lot in the form of planter islands at the ends of parking rows. This criterion is therefore met.

(b) A parking or loading area shall be separated from any lot line adjacent to a street by a landscaped strip at least ten feet (10′) in width, and any other lot line by a landscaped strip at least five feet (5′) in width;

RESPONSE: The project abuts both the W. Arlington right-of-way (along the north lot line) and the very small portion of Barton Ave along the east property line. The project does not include either parking spaces or loading adjacent to the West Arlington right-of-way. Abutting the small Barton Avenue right-of-way parking is set back well in excess of 10 feet. All other property lines, except for those internal to the development have been provided with five (5) feet of landscaping. Refer to the included site plan for illustration. This criterion is therefore met.

(c) A landscaped strip separating a parking or loading area from a street shall contain:

(A) Street trees spaced as appropriate to the species, not to exceed twenty-five feet (25′) apart, on the average,

(B) Low shrubs not to reach a height greater than three feet (3′) spaced no more than five feet (5′) apart, on the average, and

(C) Vegetative ground cover.

RESPONSE: The proposed project does not include any parking abutting the West Arlington right-of-way.

The parking area along the east property line abutting the Barton Avenue right-of-way is approximately 27 lineal feet long requiring two (2) trees, six (6) shrubs and ground cover. As shown in the included landscape plan the project provides three (3) trees, 17 shrubs and field grass ground cover along Barton Avenue.

This criterion is met as the landscaping provided exceeds the minimum required along street frontages.

(c) If a fence or wall is required or proposed, it shall be located behind required landscaped strips where such strips are adjacent to a street.

RESPONSE: There are no required fences or walls adjacent to the street.

(3) Irrigation. Provision shall be made for watering planting areas where such care is required.

RESPONSE: An irrigation system will be installed as per the note on the included irrigation plan. This criterion will therefore be met.

(4) Maintenance Required. Landscaping shall be continuously maintained.

RESPONSE: All landscaping will be continuously maintained. This criterion will therefore be met.

(5) Plant Species. The general characteristics of tree species shall be considered when planting under overhead utility lines or near sidewalks or curbs to assure that damage will not result when maturity is reached.

RESPONSE: The trees selected throughout the proposed landscape plan were selected and located so as to work well and thrive in the conditions into which they will be planted. This criterion is therefore met.

(6) Grading. The natural form of the site shall be preserved insofar as practicable unless berming or contouring of land is required.

RESPONSE: The natural form of the site will be preserved except where grading and fill is necessary as related to raising buildings to the required finished floor elevation in relation to the flood elevation. This criterion is therefore met.

(7) Public Rights-of-Way. Land within the public road right-of-way, not developed as sidewalks or driveways, shall be landscaped and maintained by the abutting property owners. Landscaping will be of the variety that would not create a road hazard or impair sight distance.

RESPONSE: Any area adjacent to either public right-of-way that is not required to be developed as sidewalk or driveway will be landscaped and maintained by the abutting property owner. Refer to the included landscape plan for detailed information regarding proposed landscape areas. This criterion is therefore met.

(8) Street Trees. Street tree planting may be required of any development and, if planted, shall be according to city requirements and of a species compatible with the width of the planting strip, and nearby street tree species.

RESPONSE: Any required street trees will be planted in accordance with city standards. This criterion will therefore be met.

Chapter 17.48 OFF-STREET PARKING AND LOADING

17.48.030 Standards for developments subject to design review.

At the time of construction, enlargement, or change of use of any structure or development subject to GMC Chapter 17.80 (design review), except as provided in the C-2 district, off-street parking spaces shall be provided as follows unless greater requirements are otherwise established under this title:

(1) Calculation of parking requirements.

(a) Square Footage as Basis for Requirement. Where square feet of the structure or use is specified as the basis for the parking requirement, the calculation shall be based on the gross leasable area (GLA).

(b) Number of Employees as Basis of Requirement. When the number of employees is specified as the basis for the parking space requirement, the calculation shall be based on the number of employees working on the premises during the largest shift at peak season.

(c) If more than one use occupies a single structure or lot, the total minimum and maximum parking requirements for the structure or lot shall be the sum of the requirements for each use computed separately.

(d) When calculation of a minimum or maximum parking requirement results in a fractional space requirement, such fraction shall be rounded down to the nearest whole number.

(e) Owners of two or more uses, structures or lots may agree to utilize jointly the same parking and loading spaces when the peak hours of operation do not substantially overlap. Satisfactory legal evidence shall be presented to establish the joint use. Shared parking spaces shall be included in the calculation of the minimum parking requirement for each of the joint users. For the purpose of calculating the maximum permitted parking for each of the joint users, shared spaces shall be apportioned between the joint users.

(f) On-street parking may count towards fulfilling up to one-quarter of the off-street parking requirements where on-street parking is allowed and the applicant can demonstrate that on-street parking is available.

(g) Parking spaces fulfilling the minimum off-street parking space requirement shall not be used for display or storage and shall not be rented, leased or assigned to any other person or organization, except as authorized under Subsection 17.48.030(l)(e).

(2) Minimum and maximum permitted parking.

(a) The number of surface parking spaces provided at no charge for a particular use shall not be less than the minimum nor exceed the maximum parking ratios identified for that use in Table 1. Minimum parking ratios for those uses not identified in Table 1 (below) shall be determined by the Planning commission during design review.

(b) For purposes of the maximum parking ratios identified in Table 1 (below), Zone A shall include those areas where 20-minute peak hour transit service is provided within a one-quarter (1/4) mile walking distance for bus transit stops or stations or one-half (1/2) mile walking distance for high capacity transit stops or stations. Zone B shall include all other areas.

(c) The following types of parking spaces are exempt from the maximum parking ratios:

(A) Parking spaces in parking structures;
(B) Fleet parking spaces;
(C) Parking spaces used to store vehicles that are for sale, lease or rent;
(D) Employee carpool parking spaces that are clearly delineated with signs;
(E) Dedicated valet parking spaces.

(e) Exceptions to the minimum and maximum parking ratios may be granted pursuant to GMC Section 17.80.090 (minor exception). Exceptions exceeding twenty-five percent (25%) of the requirement shall be subject to GMC Chapter 17.72 (variances).

.7.48.030 Table 1 MINIMUM AND MAXIMUM OFF-STREET PARKING REQUIREMENTS				
USE		**MINIMUM REQUIRED**	**ZONE A MAX. ALLOWED**	**ZONE B MAX. ALLOWED**
(5) COMMERCIAL AMUSEMENT				
(e)	Sports Club/Recreation Facility	4.3 spaces per 1,000 square feet	5.4 spaces per 1,000 square feet	6.5 spaces per 1,000 square feet
(6) COMMERCIAL USE				
(f)	Eating or Drinking Establishment Except Fast Food Restaurant with Drive-Thru	1 space per 300 square feet	1 space per 52 square feet	1 space per 44 square feet
(g)	Fast Food Restaurant with Drive-Thru	1 space per 300 square feet	1 space per 81 square feet	1 space per 67 square feet

RESPONSE: The proposed project includes 35,000 square feet of sports club, 6,300 square feet of restaurant and 2,700 square feet of fast food uses. The total minimum required parking is 181 stalls; refer to the included site plan for individual use calculations. The maximum parking allowed is 319 stalls. The proposed project includes 232 parking stalls.

This criterion is met as the minimum is provided and the maximum is not exceeded.

.7.48.040 Design requirements for permanent off-street parking and loading.

All structures and developments subject to design review shall provide permanent off-street parking and loading as follows:

(1) Parking and Loading:

(a) Parking and loading areas shall be paved with asphalt and/or concrete meeting city standards, maintained adequately for all weather use and so drained as to avoid flow of water across public sidewalks;

RESPONSE: All parking and loading areas are to be paved meeting the city standards. All areas will be maintained and have been designed to avoid drainage flow across public sidewalks. This criterion is therefore met.

(b) Off-street parking and loading areas shall be screened from abutting properties located in a residential zoning district unless such abutting properties are developed with nonresidential uses. Required screening shall be accomplished by building placement, a landscaped earth berm or a sight-obscuring fence or hedge. Required screening shall be a minimum of six feet (6′) high and shall not conflict with GMC Chapter 17.54 (clear vision).

RESPONSE: The property abuts residentially zoned land along the east property line from Barton Avenue south. Parking at this location are setback a minimum of 14 feet. Within the setback is a sight obscuring hedge of Pacific Waxmyrtle and Glossy Abelia will be used. This criterion is met as therefore met.

(c) Areas for standing and maneuvering vehicles, other than for the off-street parking and storage of truck tractors and/or semitrailers, shall be paved with an asphalt and/or concrete surface meeting city standards. The parking of truck tractors and/or semitrailers

in off-street parking areas used exclusively for the parking and/or storage of said vehicles may be allowed utilizing a durable and dustless surface other than an asphalt and/or concrete surface. Such surface must be graded, compacted and surfaced in such a manner that it will adequately support these vehicles, including trailer standing gear, will not produce dust, will not produce tracking of mud or other materials onto adjoining streets or properties, and otherwise complies with other applicable provisions of this code.

RESPONSE: All areas intended for vehicular access will be paved. This criterion is therefore met.

(2) Parking:

(a) Required parking spaces shall be located not further than two hundred feet from the building or use they are required to serve, measured in a straight line from the building;

RESPONSE: All parking provided is within 200 feet of the use/building it serves. This criterion is therefore met.

(b) Required parking shall be provided in the same zoning district or a different zoning district of a more intensive use;

RESPONSE: All parking is provided on the site and all areas of the site are within the same zone; therefore, this criterion is met.

(c) In no case shall required parking for a commercial or industrial use be provided in a residential district, except for approved conditional uses;

RESPONSE: None of the parking is provided within a residential zone; therefore, this criterion is met.

(d) Groups of more than four parking spaces shall be permanently marked and so located and served by driveways that their use will require no backing movements or other maneuvering within a street right- of-way other than an alley;

RESPONSE: All parking areas will have lines painted to indicate designated parking spaces. The proposed site does not require backing or maneuvering with a street right-of-way. This criterion is therefore met.

(e) Parking spaces along the outer boundaries of a parking lot shall be contained by a curb at least four inches (4") high and setback a minimum of five feet (5') from the property line. A bumper rail may be substituted for a curb;

RESPONSE: All boundaries of the parking area are curbed with a minimum 4" high curb. All parking is setback a minimum of five (5) feet. This criterion is therefore met.

(f) Off-street parking and loading areas, including parking spaces and access aisles, shall meet or exceed the minimum dimensional standards identified in Tables 2 and 3 and Figure 1 (of this chapter). Access aisles shall be of sufficient width for all vehicular turning and maneuvering;

RESPONSE: All standard parking stalls are 90 degrees and a minimum 9.5 feet wide by 18 feet long. All access aisles are a minimum 24 feet wide. These standard stalls meet the minimum required dimensions of 9.5 feet wide and 18 feet long with a minimum 24 feet access aisle as stated in Table 17.48.040. All compact stalls are 90 degree

and a minimum 8.5 feet wide by 16.5 feet long. These compact stalls met the minimum required dimensions of 8.5 feet by 16 feet with a minimum aisle of 24 feet. Sufficient width for all vehicular turning and maneuvering has been provided. This criterion is therefore met.

(g) Up to fifty percent (50%) of required parking spaces may be provided for compact cars;

RESPONSE: The project is required a minimum of 181 stalls allowing for 90 to be compact. The project provides 37 (20%) at a compact size. This criterion is met as the number of compact stalls provided does not exceed the maximum allowed.

(h) Parking areas shall be designed, to the maximum extent practicable, to avoid large, uninterrupted rows of parking spaces.

RESPONSE: The longest row of parking is along the south property line where there are 18 contiguous stalls. All other rows range from four and six contiguous spaces to 12 spaces. The proposed site design provides more than the minimum required interior parking lot landscaping thus this one row of 18 contiguous stalls will not negatively impact the aesthetics or function of the site.

(3) Loading:

(b) Buildings or structures to be built or substantially altered which receive and distribute material or merchandise by truck shall provide and maintain off-street loading berths in sufficient numbers and size to adequately handle the needs of the particular use. If loading space has been provided in connection with an existing use or is added to an existing use, the loading space shall not be eliminated if elimination would result in less space than is required to adequately handle the needs of the particular use;

RESPONSE: The proposed project includes three buildings. The 35,000 square foot retail building does not include a designated loading berths as it is a fitness use. After the initial installation of the fitness equipment any deliveries to the site are anticipated to be small (sports drinks, snacks and other small provisions) which are typically delivered by van style delivery vehicles. The pad buildings are both restaurants and it is anticipated that all deliveries will occur by small delivery truck and occur to off hours. Thus, designated loading areas are not provided as delivery vehicles can use adjacent parking during the off hours. This criterion is met as the loading needs of the proposed uses have been considered and can be provided for with the proposed design.

(c) Off-street parking areas used to fulfill the requirements of this section shall not be used for loading and unloading operations except during periods of the day when not required to take care of parking needs;

RESPONSE: All buildings will be briefly use adjacent parking for loading and unloading. None of the buildings deliveries will occur via large 18 wheel trucks but smaller delivery van style trucks. The health club user is not anticipated to receive many shipments once occupancy is granted. Deliveries to the pad building uses will occur at off hours from their standard operating hours. Loading and delivery needs for the site will thus not conflict with parking needs for the site. This criterion is therefore met.

(d) Loading facilities shall be located at least twenty feet (20′) from residential property. Loading spaces shall be located on the site and directly accessible to the main structure.

RESPONSE: This criterion is met as there are no loading areas located closer than 20 feet from the east property line and abutting residential zone.

17.48.040 Table STANDARD PARKING DIMENSIONS IN FEET			
Parking Angle	**Stall Width**	**Stall Depth**	**Aisle Width**
45°	9.5′	18.0′	14.0′
60°	9.5′	18.0′	16.0′
90°	9.5′	18.0′	24.0′

17.48.040 Table COMPACT PARKING DIMENSIONS IN FEET			
Parking Angle	**Stall Width**	**Stall Depth**	**Aisle Width**
45°	8.5′	16.0′	14.0′
60°	8.5′	16.0′	16.0′
90°	8.5′	16.0′	24.0′

17.48.050 Bicycle parking standards.

(1) Standards for bicycle parking apply to full-site design review of new construction for multi-family residential (four units and larger) and new commercial/industrial developments. The Planning Commission may grant exemptions to bicycle parking requirements in connection with temporary uses or uses that are not likely to generate the need for bicycle parking.

RESPONSE: The proposed project is a commercial development and provides bicycle parking to meet the requirements of this chapter. Refer to the following narrative and site plan for detailed bicycle parking information. This criterion is therefore met.

(2) Required bicycle parking must be lighted and be located within fifty feet (50′) of an entrance to the building:

RESPONSE: All parking is lit and located within 50 feet of one of the three building's main entries. This criterion is therefore met.

(a) Location. Bicycle parking may be provided within a building if the location is easily accessible for bicycles;

RESPONSE: There are no bicycle stalls proposed within a building.

(b) Covered Spaces. Cover for bicycle parking can be accommodated by buildings or roof overhangs, awnings, bicycle lockers, bicycle storage within buildings or free-standing shelters;

RESPONSE: All covered parking will be provided with cover by awnings and canopies on the facades of the buildings. This criterion is therefore met.

(c) Signs. If the bicycle parking is not visible from the street or main building entrance, then a sign conforming to the city's standards for on-site traffic control, Section 17.52.060(1), shall be posted indicating the location of the parking facilities;

RESPONSE: Signage will be installed as necessary.

(d) Rack Type and Dimensions:
  (A) Bicycle racks must hold bicycles securely by the frame and be securely anchored;
  (B) Bicycle racks must accommodate:
    (i) Locking the frame and one wheel to the rack with a high-security U-shaped shackle lock, or approved substitute; or
    (ii) Locking the frame and both wheels to the rack with a chain or cable not longer than six feet (6′);
  (C) The Planning Commission may approve alternate bicycle racks provided they are convenient and secure;

RESPONSE: The project is proposing a staple style rack that holds the bicycle securely by the frame. The racks will be securely anchored and located on a concrete service. This criterion is therefore met.

(e) Bicycle parking spaces must be at least six feet (6′) long and two feet (2′) wide, and in covered situations the overhead clearance must be at least seven feet (7′). An aisle five feet (5′) wide for bicycle maneuvering must be provided;

RESPONSE: All spaces provided are a minimum six (6) feet long and two (2) feet wide. All stalls are provided with a minimum five (5) feet wide aisle. Those stalls requiring coverage will have a minimum overhead clearance of seven (7) feet. This criterion is therefore met.

(f) Areas set aside for required bicycle parking must be clearly marked and reserved for bicycle parking only;

RESPONSE: All bicycle areas are clearly marked and reserved for only bicycle parking. This criterion is therefore met.

(g) Required parking in all developments required to comply with this section shall provide a minimum five percent (5%) bicycle parking spaces based on the city's required minimum number of automobile parking spaces:
  (A) All development shall have a minimum two (2) bicycle parking spaces;
  (B) If more than seven (7) bicycle parking spaces are required, fifty percent (50%) of the spaces shall be covered. One hundred percent (100%) of all bicycle parking spaces for multi-family development of four (4) units and more shall be covered.

RESPONSE: The proposed project provides 232 vehicular parking stalls which required 10 bicycle parking stalls. The stalls have been distributed between the proposed building's onsite with eight (8) stalls at the 35,000 square building, two (2) stalls at the Restaurant and one (1) stall at the Fast Food building. Since there are more than seven (7) required bicycle parking stalls five are required to be covered. The project provides a minimum of five (5) that are covered. This criterion is therefore met as the minimum number of bicycle stalls and covered stalls are provided.

Chapter 17.50 VEHICULAR AND PEDESTRIAN CIRCULATION

17.50.020 Vehicular and pedestrian circulation generally.

Vehicular and pedestrian circulation facilities, including walkways, provisions for the handicapped, interior drives and parking as provided under GMC Chapter 17.48 (off-street parking and loading), shall be designated as follows:

(1) Impervious Surface. Provide for least amount of impervious surface necessary to adequately serve the type and intensity of proposed land uses within developments as well as providing adequate access for service vehicles.

RESPONSE: Impervious surfaces have been limited to those needed for required parking, loading and pedestrian pathways. This criterion is therefore met.

(2) Traffic Separation. Provide when feasible, a separation of motor vehicular, bicycle and pedestrian traffic.

RESPONSE: Pedestrian pathways are separated from vehicular areas through the use of raised walkways (except at drive aisle crossings). The number of drive aisle crossings has been designed to be the least amount feasible yet still provide direct and convenient access. Bicycle parking is located near the building entries and are also raised and separated from the vehicular areas onsite. This criterion is therefore met.

(3) Curbs and Sidewalks. Provide curbs, associated drainage, and sidewalks within the right-of-way or easement for public roads and streets.

RESPONSE: The abutting West Arlington Street right-of-way is improved with curb and sidewalk. Where curb cuts exist and are removed they will be patched and improved to current required standards to match the existing conditions. There are no right-of-way dedications required or proposed. This criterion is therefore met.

(4) Traffic Volume Expansion. Provision shall be made to accommodate any increased volume of traffic resulting from the development. If streets adjacent to or serving the site are inadequate, widening, dedication of property for future widening, or other street improvements may be required. The development shall be designed to minimize traffic volume increases on minor streets and underdeveloped streets.

RESPONSE: A full TIA has been completed by Kittelson and Associates that demonstrates no negative impacts to the surrounding street system. Refer to the included TIA. This criterion is therefore met.

(5) Handicapped Needs. Provide for the special needs of the handicapped such as wheelchair ramps and Braille signs.

RESPONSE: All walkways and buildings have been designed to meet the ADA accessibility standards and are provided with ramps and signage per the ADA code. This criterion is therefore met.

(6) Pedestrian Circulation Standards. An on-site pedestrian circulation system shall be provided for new nonresidential and multi-family developments and for new buildings added to existing nonresidential and multi-family developments. The system shall comply with the following standards:

(a) The system shall connect all adjacent streets to the main entrances of nonresidential buildings and to unit and/or building entrances of multi-family developments;

RESPONSE: The site is designed for a primary north-south walkway that runs in a direct, straight-line path from the West Arlington Street right-of-way to the main entry of the health club building. An east-west walkway cross the north-south walkway and runs along the south facades of both pad building providing direct access to each pad building primary entry. This criterion is met as all building are connected to the adjacent right-of-way via a safe and reasonably direct walkway.

(b) The system shall connect all buildings and other areas of the site, such as parking areas, bicycle parking, recreational areas, common outdoor areas and any pedestrian amenities.

RESPONSE: The pedestrian walkways provided give access to each building, the buildings entries, bicycle parking, and vehicular parking areas are connected via the primary north-south and east-west walkways. A second north-south walkway is proposed along the west property line that will give access from the right-of-way and site to the river buffer and future recreation trail. All areas of the site are provided pedestrian connects; therefore, this criterion is met.

(c) The system shall be hard-surfaced. For nonresidential development, the system shall be a minimum of six feet (6′) wide. For multi-family residential development, the system shall be a minimum of five feet (5′) wide.

RESPONSE: All walkways will be constructed of concrete and a minimum six (6) feet wide. Refer to the included site plan for illustration of the walkways. This criterion is therefore met.

(d) The system and off-street parking and loading areas shall be designed to avoid, to the maximum extent possible, the system's crossing off-street parking and loading areas. Where the system crosses driveways or off-street parking and loading areas, the system shall be clearly identifiable through the use of elevation changes, speed bumps, a different paving material or other similar method. Striping shall not fulfill this requirement;

RESPONSE: The proposed pedestrian system includes only three drive aisle crossings; one for the east-west pathway and two for the north-south pathway. All crossings will be paved with concrete to contrast with the parking area asphalt paving. This criterion is therefore met.

(e) Where the system is parallel and adjacent to an auto travel lane, the system shall be a raised path or be separated from the auto travel lane by a raised curb, bollards, landscaping or other physical barrier. If a raised path is used, the ends of the raised portions shall be equipped with curb ramps;

RESPONSE: In all areas, except at drive aisle crossings, pathways that are parallel and adjacent to an auto travel lane are to be raised. All raised walkways are provided with ramps at the ends. This criterion is therefore met.

(f) The system shall comply with the Americans with Disabilities Act (ADA).

RESPONSE: The project has been designed in accordance with the Americans with Disabilities Act (ADA). This criterion is therefore met.

(7) New industrial, institutional, retail and office developments requiring full site design review that, when completed, generate an average daily traffic of 1,000 trips or greater based on the most recent edition of Institute of Transportation Engineers Report on Generation shall provide either a transit stop on-site or connection to a transit stop along a transit route when the transit operator requires such an improvement.

RESPONSE: The site has frontage on West Arlington Street. Bus lines 32, 34 and 79 have stops located at the southwest corner of the West Arlington Street and West Clackamas Boulevard intersection on the abutting parcel to the east. A west bound stop exists across the West Arlington Street right-of-way on the parcel to the northwest of the site. Both transit stops are located less than 200 feet from the site. With existing transit stops located so close to the project site there are no new transit stops proposed; however, the site plan includes direct straight-line walkways that connect to the right-of-way walk and existing transit stops to ensure that transit users are adequately and conveniently serviced.

17.50.030 Streets and roads generally.

(1) The location, width and grade of streets shall be considered in their relation to existing and planned streets, to the topographical conditions, to public convenience and safety, and to the proposed use of land to be served by the streets. The street system shall assure an adequate traffic or circulation system with intersection angles, grades, tangents and curves appropriate for the traffic to be carried considering the terrain. Where location is now shown in a development plan, the arrangement of streets shall either:

(a) Provide for the continuation or appropriate projection of existing principal streets in surrounding areas; or

(b) Conform to a plan for the neighborhood approved or adopted by the Planning Commission to meet a particular situation where topographical or other conditions make continuance or conformance to existing streets impractical.

RESPONSE: The site abuts both W. Arlington Street and Barton Avenue. Both rights-of-way are of adequate width and construction and therefore do not require dedications or extensions. There are no new streets planned as part of the proposed project. This criterion is therefore met.

17.50.040 Street and road standards.

The design and improvement of streets within a development and streets adjacent but only partially within the development shall comply with improvement specifications adopted pursuant to GMC Section 17.42.030 and with the following standards:

(1) Right-of-Way and Roadway Widths. Minimum right-of-way and roadway widths shall be as follows:

Type of Street	R.O.W Width (in feet)	Roadway Width (in feet)

Major arterial	80′ to 120′	72′ to 80′
Minor arterial	60′ to 80′	Minimum 42′
Collectors	50′ to 60′	Minimum 36′
Local	Minimum 40′	Minimum 32′ w/5′-foot utility easement on each side
Alley/Access way	Minimum 20′	Minimum 20′

RESPONSE: Both abutting rights-of-way, W. Arlington and Barton Avenue, are adequate width as per the pre-application meeting with City staff.

(6) Existing Streets. Whenever existing streets adjacent to or within a tract are of inadequate widths, additional right-of-way shall be provided at the time of development.

RESPONSE: This criterion does not apply as both abutting rights-of-way are of adequate width.

(14) Curbs and Driveways. Curb cuts and driveway installations shall be installed, according to city standards.

RESPONSE: All proposed curb cuts and driveways have been designed in accordance with city standards. Refer to the included civil drawings. This criterion is therefore met.

(15) Sidewalks. Sidewalks shall be installed on both sides of a public street and at any special pedestrian way within a development. The Planning Commission may approve a development with sidewalks on one side only of a local street if special site conditions exist or if alternative pedestrian routes are available, or if the proposed sidewalk is not likely to become part of a complete pedestrian route in the foreseeable future.

RESPONSE: The abutting West Arlington Street right-of-way is fully developed with a compliant sidewalk along the project's frontage. No additional improvements are required aside from reconstruction as existing curb cuts that will be removed. This criterion is therefore met.

(16) Bicycle and Pedestrian Routes. Bicycle/pedestrian routes shall be required when consistent with Map 5 of the Comprehensive Plan and when necessary to provide a system of interconnecting walkways and safe, convenient access to a transit stop for a school, park, church, day care center, library, commercial center, community center or similar facility. Separate bicycle/pedestrian ways not located in a street right-of-way shall include a ten-foot (10′) wide paved surface within a twelve-foot (12′) wide right-of-way, unless conditions warrant otherwise and shall be illuminated as required in GMC Subsection 17.44.020(6).

RESPONSE: The project does not include construction of a bicycle or pedestrian route.

(18) Street Lights. Street lights shall be installed and shall be served from an underground source of supply.

RESPONSE: Street lights will be installed along W. Arlington as part of the proposed project. Refer to the included lighting plan and cut sheets for detailing lighting information. This criterion is therefore met.

(19) Storm Sewers. Catch basins shall be installed and connected to drainage tile leading to storm sewers or drainage ways.

RESPONSE: CDS Water Quality Manholes are used and connected to an underground detention system. This detention system is tried into the existing outfall on the abutting western property and drains to a dispersion trench. This criterion is therefore met.

(20) Monuments. Upon completion of street improvements, monuments shall be reestablished and protected in monument boxes at every street intersection and all points of curvature and points of tangency of street center lines. Elevation bench marks shall be established at each street intersection monument with elevations to U.S. Geological Survey datum. All lot corners will be marked by a metal rod.

RESPONSE: All monuments that are removed for street improvements will be reestablished and protected in monument boxes. Elevation bench marks will also be established or reestablished as needed. This criterion will therefore be met.

hapter 17.52 SIGNS

17.52.040 General provisions.

(1) Permit required. Unless exempted under this chapter, a permit is required to place, construct, erect, display or modify a sign.
(2) Review process. The city administrator or his designee will review applications for sign permits for compliance with this chapter unless otherwise stated in this chapter. The city administrator's decision will be rendered in accordance with GMC 17.94 and may be appealed in accordance with GMC 17.92.
(3) Structural code compliance. A sign must comply with the applicable provisions of the State of Oregon Structural Specialty Code and any related or similar provisions adopted by the City, unless such compliance is modified by this chapter.
(4) Sign clearance. A minimum clearance of eight (8) feet above sidewalks and fifteen (15) feet above driveways must be provided under a freestanding sign.

RESPONSE: The proposed site sign does not project over either a walkway or a driveway; therefore, this criterion does not apply.

(5) Vision and sight consideration. A sign must be situated in a manner so as not to adversely affect public safety. Compliance with the City's regulations regarding clear vision is required.

RESPONSE: All signage has been placed in compliance with required clear vision areas. Refer to the included site plan for illustration. This criterion is therefore met.

(6) Blanketing. A sign must not be situated in a manner that results in the blanketing or obfuscation of an existing sign on an adjacent property.

RESPONSE: Signage proposed will not blanket or obfuscate an existing sign on any adjacent property; therefore, this criterion is met.

(7) Illuminated signs and electric elements.
(a) A sign illuminated in any manner must shield, deflect or otherwise prevent the light illuminating the sign from shining into or onto a neighboring property or impair the vision of any vehicle operator;

RESPONSE: Illuminated signage has been designed so as to ensure that it does not shine into or onto a neighboring property or impair the vision of any vehicle operator. This criterion is therefore met.

(b) No sign or illuminating device associated with a sign may have blinking, flashing or fluttering lights, except as otherwise allowed under this chapter;

RESPONSE: The proposed signage does not include blinking, flashing or fluttering lights. This criterion is therefore met.

(c) No sign or illuminating device associated with a sign may be used in a manner that may be confused with or construed to be traffic signals, traffic control devices, or lights on emergency vehicles;

RESPONSE: The proposed signage does not include any device or sign that could be confused with or construed to be a traffic signal, traffic control device or emergency lights. This criterion is therefore met.

(d) Except as otherwise provided in this chapter, an illuminated sign cannot be located closer than twenty-five (25) feet to a lot in a residential zoning district;

RESPONSE: No illuminated signage is proposed closer than 25 feet to a residentially zoned lot (along the east property line). Refer to the included site plan and elevations. This criterion is therefore met.

(e) The light intensity of an illuminated sign or illuminating device associated with a sign must conform to the accepted standards of the sign industry, as provided by the Oregon Electric Sign Association.

RESPONSE: All illuminated signage has been designed in accordance with the accepted standards of the sign industry per Oregon Electric Sign Association. This criterion is therefore met.

(f) A sign containing any electrical components or elements, or illuminated by electrical lighting must be approved under the National Electric Code, as modified by Oregon's regulations, and any related or similar provisions adopted by the City.

RESPONSE: All signs containing electrical components or elements have been designed in accordance with the National Electric Code as modified by Oregon's regulations. This criterion is therefore met.

(g) An illuminated sign or illuminating device associated with a sign requiring an electric power source must use an Oregon-approved power outlet.

RESPONSE: All illuminated signage or associated device required power has been designed to use an Oregon-approved power outlet. This criterion is therefore met.

(8) Moving signs. Except as otherwise allowed under this chapter, a sign must remain in a static state, and cannot be designed to rotate, flutter or appear to move.

RESPONSE: The signage proposed does not include any rotating, fluttering or moving parts. This criterion is therefore met.

(9) Maintenance and hazards.
(a) A sign must be in good repair and maintained in a neat, attractive and safe condition, and no sign may be used or situated in a manner that creates a hazard to the public.
(b) Failure to use a sign's copy area for a period of more than twelve (12) consecutive months will constitute a discontinuance of the sign's use and may be declared a nuisance by the City.

RESPONSE: All signage will be maintained by the property owner and/or tenants so as to remain in good repair and safe condition. The signage's neat and attractive appearance with be maintained. This criterion will therefore be met.

(11) Setbacks.

(b) Unless otherwise stated herein, the minimum setback for a sign with a sign face greater than twenty-four (24) square feet in area is the same as the minimum setback required in the zoning district in which the sign is located. If no setback exists, the sign must be located in an area that ensures it does not compromise public safety, as determined by the city administrator or designee.

RESPONSE: The proposed site sign has been located outside of all required clear vision areas and does not compromise public safety; therefore, this criterion is met.

(12) Area Calculation.
- (a) Unless otherwise stated herein, the sign face area limitations established by this chapter will apply on a per-side basis. Every sign is limited to a maximum of two (2) sides.
- (b) Sides may be of no greater area than that necessary to provide a frame or support structure to the sign face.
- (c) For signs that are allowed a maximum area of twenty-four (24) square feet or more:
  - (A) Sides cannot exceed the maximum area standard by more than one (1) foot in width, unless the applicant demonstrates to the city administrator's satisfaction that a greater width is necessary to provide adequate support for the sign faces; and
  - (B) Two (2) support poles may be excluded from the area calculation provided that the caliper of any pole does not exceed one (1) foot, unless the applicant demonstrates to the city administrator's satisfaction that a greater caliper is necessary to provide adequate support for the sign.

RESPONSE: All signage provided has a maximum of two faces. Both sides meet the area maximums stated above. This criterion is therefore met.

(e) Support structures excluded from the area calculation may only contain copy or graphics to the extent that such markings are placed on the support structures by the structures' manufacturer.

RESPONSE: The support structures are not included in the area of the sign and do not contain any copy or graphics. This criterion is therefore met.

17.52.050 Exemptions.

(1) The following signs do not require a sign permit, but must otherwise conform to this chapter's standards:
- (a) A sign with a sign face area of two (2) square feet or less;
- (b) Government owned or maintained signs in the public right-of-way;
- (c) A sign in an open space district;
- (d) Temporary signs;
- (e) A-frame signs in residential districts.

RESPONSE: The proposed project does not include any exempt signs at this time.

(2) This chapter does not regulate the following signs:
- (a) Dispensers, such as beverage, newspaper and recycling machines;
- (b) A sign required by local, state or federal law or regulation, such as but not limited to building and address numbers, street signs, and public notices;
- (c) A sign not oriented towards or intended to be legible from a right-of-way, private road or other private property, unless otherwise regulated herein;

RESPONSE: The proposed project does not include any of the above unregulated signage.

17.52.060 Prohibited signs.

(1) This section is provided for the benefit of sign applicants and for the administration of this chapter. However, this section must be read consistently with GMC 17.52.030. As such, because a specific type of sign is not listed as prohibited does not mean that it is allowed. The following is a non-exclusive list of signs that are prohibited in the City:
- (a) A sign that obstructs the vision clearance of a right-of-way or driveway intersection;
- (b) A sign affixed to or placed on a roof, or an on-building sign extending above the roofline of the building on which it is located;
- (c) A sign that obstructs ingress or egress through a door, window, fire escape, standpipe or any similar facility required or designated for safety or emergency use;
- (d) A sign in the public right of way, other than government owned or managed signs, unless otherwise specifically allowed herein.
- (e) Strobe lights.
- (f) A sign affixed to or placed upon a tree.
- (g) A sign affixed to a utility pole.

RESPONSE: The proposed project does not include any of the above prohibited signage.

17.52.070 Signs in commercial and industrial districts.

(1) Freestanding signs. Freestanding signs are allowed in commercial and industrial zones.
- (a) Number. One (1) freestanding sign is allowed for a development or complex, even when more than one tax lot or ownership is included in the development. A second freestanding sign is permitted in the following cases:
  - (A) If the development has a public vehicular access point on each of two (2) or more streets, and two (2) freestanding signs are desired, each must be located at access points on different streets; or
  - (B) The development has more than three hundred (300) feet of continuous frontage on a major arterial. In this instance, the combined sign face area of the two freestanding signs cannot exceed the area allowed under GMC 17.52.070(1)(c)(B).
  - (C) Regardless of whether a development qualifies under 1(a)(A) and 1(a)(B) above, no more than two (2) freestanding signs will be permitted.

RESPONSE: The project is proposing one freestanding sign located east of the main entry drive on West Arlington Street. This criterion is therefore met.

- (b) Height.
  - (A) Pole signs: The maximum height of a freestanding pole sign is twenty (20) feet from the ground.
  - (B) Monument signs: The maximum height of a monument sign is five (5) feet from the ground.

RESPONSE: The project includes one pole sign located to the east of the main entry drive from West Arlington. The maximum height of the proposed sign is 20 feet. This criterion is therefore met.

- (c) Area. The maximum sign face area for a freestanding sign is forty (40) square feet. The maximum sign face area for a freestanding sign may be exceeded only in the following instances:

(A) The applicant demonstrates that an increased sign face area is warranted due to one or more of the following factors. Under this subsection, the maximum sign face area cannot exceed sixty (60) square feet.
  (i) The development upon which the sign will be placed is significantly larger than other developments in the City;
  (ii) The sign will be constructed of wood, brick or stone, or a combination of the same, and illuminated indirectly;
  (iii) An electronic message sign or other changeable text copy sign will be included, as permitted by this chapter.

RESPONSE: The proposed project is requesting a sign whose maximum area is 60 square feet under subsection (i) above as the sign will serve a multi-tenant development. This criterion is therefore met.

(d) Illumination. A freestanding sign may be internally or indirectly illuminated consistent with this chapter's standards regarding the illumination of signs.

RESPONSE: The proposed freestanding sign will be lit internally per the standards of this chapter. This criterion is therefore met.

(2) On-building signs. On building signs are allowed in commercial and industrial zones.
  (a) Number. The maximum on-building sign face area may be distributed among any number of signs.
  (b) Area. The maximum on-building sign area is calculated as follows:
    (B) If a freestanding sign exists for a development, the maximum on-building sign face area for each tenant of that development is one (1) square foot per lineal foot of the tenant's primary building wall.
    (C) Each tenant is allowed a minimum of thirty-two (32) square feet of on-building sign face area.
    (D) No individual on-building sign may exceed two hundred (200) square feet in sign face area.

RESPONSE: The development is proposing a freestanding site sign therefore the maximum allowed on-building signage is one (1) square feet per lineal foot of building wall. At this time the only on-building signage included with this application is for the fitness use. The fitness building is approximately 182 feet in length along the north, or primary building wall, allowing for the maximum signage of 182 square feet. The proposed elevations show a sign on the north, west and south elevations. The total on-building signage for the fitness building is will not exceed 182 square feet between the three signs proposed. None of the three signs exceeds 200 square feet in area individually. This criterion is therefore met.

  (c) Wall graphics. The use of external walls for graphics, artwork or other displays shall be subject to this chapter's limitations for on-building signs.
  (d) Illumination. An on-building sign may be internally or indirectly illuminated consistent with this chapter's standards regarding the illumination of signs.
    (D) Uses materials and colors that are the same, or substantially the same, as those used on the building associated with the sign.
    (E) A monument sign meeting the standards of this subsection is permitted in addition to any freestanding sign otherwise permitted by this chapter.

RESPONSE: All building signage proposed will be internally lit. This criterion is therefore met.

Chapter 17.54 CLEAR VISION

17.54.020 Clear vision area.

(b) At a driveway serving a parking lot with capacity of more than eight automobiles and at corners of an intersection of a street controlled by stop signs or a traffic signal if the street intersection or driveway has an unobstructed sight distance specified in a 2001 publication titled "A Policy on Geometric Design of Highways and Streets" prepared by the American Association of State Highway and Transportation Officials (AASHTO), summarized in the table below; however, the Planning Commission may approve a driveway location with less than minimum intersection sight distance if no other suitable location is available:

RESPONSE: The proposed project includes one access onto West Arlington Street which has speed limit of 25 miles per hour along the project frontage. This speed, per the table below, requires a minimum sight distance of 280 feet. The project provides unrestricted clear vision per the Clackamas County Standards of Section 240.4 for 280 feet from 14.5 feet back from the curb line out to the center of the travel lane. See the included site plan for depiction. This criterion is therefore met.

Posted Speed Limit	Minimum Intersection Sight Distance
20	225 ft.
25	280 ft.
30	335 ft.
35	390 ft.
40	445 ft.
45	500 ft.

hapter 17.56 DRAINAGE

17.56.020 Standards.

Adequate provisions shall be made to ensure proper drainage of surface waters, to preserve natural flow of watercourses and springs and to prevent soil erosion and flooding of neighboring properties or streets. Such provisions shall include, but not be limited to the following:

(1) Generally. All development shall be planned, designed, constructed and maintained to:
- (a) Protect and preserve existing drainage channels to the maximum practicable extent;
- (b) Protect development from flood hazards;
- (c) Provide a system by which water within the development will be controlled and managed without causing damage or harm to the natural environment, or to property or persons within the drainage basin;
- (d) Assure that waters drained from new or redevelopment sites are substantially free of pollutants, including sedimentary materials, through the use of stormwater treatment facilities as referenced herein and appropriate erosion and sediment control practices;
- (e) Assure that runoff drained from new and redevelopment sites is managed in accordance with criteria outlined in the City of Gladstone Stormwater Treatment and Detention Standards as to not cause erosion to any greater extent than would occur in the absence of development;
- (f) Avoid placement of surface detention or retention facilities in road rights of way.

RESPONSE: The proposed project has been designed in accordance with all City, State and County regulations. Existing drainage channels will be protected and preserved to the extent possible and the development will be protected from flood hazards through balanced cut and fill through use of an underground flood storage system. All water onsite will be directed and detained in an underground detention system and treated with CDS water quality manholes. No detention or retention facilities have been designed within an abutting right-of-way. These criteria are therefore met.

(2) Watercourses. Where culverts cannot provide sufficient capacity without significant environmental degradation, the city may require the watercourse to be bridged or spanned.

RESPONSE: There are no watercourses onsite that need to be bridged, spanned or put into a culvert. This criterion does not apply.

(3) Easements. In the event that a development or any part thereof is traversed by any watercourse, channel, stream or creek, gulch or other natural drainage channel, adequate easements for storm drainage purposes shall be provided to the city. This does not imply maintenance by the city.

RESPONSE: This criterion does not apply as there are no watercourses, channels, streams, creeks or gulches that transverse the site.

(4) Obstructions. Channel obstructions are not allowed, except as approved for the creation of a detention or retention facility. Fences with swing gates may be utilized.

RESPONSE: There are not channels onsite; therefore, this criterion does not apply.

(5) Surface Drainage and the Storm Sewer System. Stormwater treatment and detention facilities shall be designed and installed in accordance with criteria outlined in the City of Gladstone Stormwater Treatment and Detention Standards.

RESPONSE: All stormwater treatment and detention facilities proposed have been designed in accordance with the City of Gladstone Stormwater Treatment and Detention Standards. This criterion is therefore met.

hapter 17.58 GRADING AND FILL

17.58.020 General provisions.

(1) Grading of Building Sites. Grading and fill of building sites shall conform to Chapter 70 of the Uniform Building Code. The character of soil for fill and the characteristics of lots and parcels made usable by fill shall be suitable for the purpose intended. When deemed necessary, the building official may require geological studies to determine the suitability of the site.

RESPONSE: Any grading and/or fill required will confirm to Chapter 70 of the Uniform Building Code. This criterion will therefore be met.

(2) U.B.C. Requirements. The building official shall enforce Chapter 70 of the U.B.C. and shall require soils reports and/or engineering studies before issuing a building permit for fill, excavation, construction or related activities involving soils with restrictive features such as instability, wetness, flooding or other limitations.

RESPONSE: All required reports and studies will be provided. This criterion will therefore be met.

hapter 17.60 UTILITIES

17.60.020 Standards.

Utility services and facilities shall be appropriate to the scale and type of development and consideration shall include, but not be limited to the following standards:

(1) Site Disturbance. The location, design, installation and maintenance of all utility lines and facilities shall be carried out with minimum feasible disturbances of soil and site.

RESPONSE: All construction onsite will be carried out with the minimum feasible disturbances to soil and the site. This criterion will therefore be met.

(2) Electricity. Gas. Communications. All development which has a need for electricity, gas and communications services shall install them pursuant to the requirements of the district or company servicing the development. Except where otherwise prohibited by the utility district or company, all such facilities shall be underground.

RESPONSE: All utility installations will be conducted following the rules, regulations and requirements of the City, County, State and servicing utility company; therefore, this criterion will be met.

(3) Underground Facilities. The developer shall make necessary arrangements with utility companies or other persons or corporations affected for the installation of underground lines and facilities. Electrical lines and other wires, including but not limited to communication, street lighting and cable television, shall be placed underground.

RESPONSE: All newly installed utilities will be undergrounded. This criterion is therefore met.

(4) Sanitary Sewers. All development which has a need for sanitary sewers shall install the facilities pursuant to the requirements set forth by the public works department. Installation of such facilities shall be coordinated with the extension of necessary water services and storm drainage facilities. Requirements for development shall include the following:

(a) Sanitary sewers shall be installed to city standards to serve or be available to all development. Design shall take into account the capacity and grade to allow for desirable extension beyond the development. If required, sewer facilities will, without further sewer construction, be sized to directly serve property outside the development;

RESPONSE: Sanitary of adequate size exists within the West Arlington Street right-of-way and will be utilized the project. Connection to and installation of the sanitary service for the site will be conducted in accordance with all city standards. This criterion will therefore be met.

(b) If the area outside the development to be directly served by the sewer line has reached a state of development to justify sewer installation at the time, the Planning Commission may recommend to the City Council construction as an assessment project with such arrangement with the developer as is desirable to assure financing his share of the construction. If it is determined by the city that a larger sized line than normally required to serve the property is desirable to provide for future extension, the city will reimburse

the developer the difference in cost of pipe between that required to serve the development and that stipulated by the city;

RESPONSE: At this time, from the preapplication meeting, we understand that the existing sewer line is adequate to serve the proposed project.

(5) Water Services. All development which has a need for water service shall install water facilities and grant necessary easements pursuant to the requirements of the utility district serving the development. In addition, requirements for development shall include the following:

(a) Water lines to serve residential developments shall be a minimum six inch (6″) nominal diameter and water lines to service commercial and industrial developments shall be a minimum eight inch nominal diameter with valves and fire hydrants serving each building site in the development and connecting the development to city mains shall be installed. Prior to starting building construction, the design shall take into account provisions for extension beyond the development and to adequately grid the city system. Hydrant spacing to be based on accessible area served according to A.I.A. recommendations and as approved by the Fire Chief;

RESPONSE: The commercial development will connect into the existing eight (8) inch water main located along the west property line at the proposed new cross access with the adjacent Walgreens development. This criterion is therefore met.

(6) Coordination with Street Surfacing. All underground utilities, sanitary sewers and storm drains installed in streets by the developer or by any utility company shall be constructed prior to the surfacing of the streets. Stubs for service connections for underground utilities and sanitary sewers shall be placed to a length minimizing the necessity for disturbing the street improvements when service connections are made.

RESPONSE: All utilities have been designed to minimize the impact to surrounding streets. This criterion is therefore met.

(7) As-built Submittals. A map showing all public improvements, as built, shall be filed with the city engineer upon completion of the improvements.

RESPONSE: All required as-built drawings will be provided. This criterion will therefore be met.

Chapter 17.80 DESIGN REVIEW

17.80.021 Applicability.

(1) This chapter shall apply to new structures; additions to existing structures; site development, such as grading, parking lot construction or commercial/industrial use of an undeveloped property; change of use; and major remodeling, with the following exceptions:

RESPONSE: The proposed project is a commercial development on currently undeveloped property; therefore, Design Review is required.

17.80.061 Submittal requirements.

(1) An application for design review shall include a minimum of twelve (12) copies of the following plans drawn to scale. A project summary shall accompany the application when necessary to describe special circumstances such as a request for a minor exception pursuant to GMC Section 17.80.090 (minor exceptions).

(a) Vicinity Map: The vicinity map shall show the location of the subject property relative to well-known landmarks in all directions and shall be at least four inches (4") by four inches (4") in size.

RESPONSE: The vicinity map has been included on the site plan Sheet A101.

(b) Site Plan: The site plan shall include the following:

(A) The applicant's entire property and the surrounding area to a distance sufficient to determine the relationship between the applicant's property and proposed development and adjacent property and development;

RESPONSE: The site plan includes areas outside of the development area on adjacent properties so as to sufficiently illustrate the relationship of the development to surrounding properties. Refer to the included site plan. This criterion is therefore met.

(B) Lot lines, dimensions and area of the subject property;

RESPONSE: Lot lines are shown on the included Topographical map as well as the site plan. Dimensions are shown on the included Topographic map.

(C) Complete names, addresses and telephone numbers of the property owner, applicant and project designer;

RESPONSE: Contact information for the property owner, applicant (contract purchaser) and project designer have been included on the submitted site plan, Sheet A101. This criterion is therefore met.

(D) Natural features including, but not limited to, individual trees greater than six inches (6″) in diameter at five feet (5′) above the ground (identify the species), wooded areas, wildlife habitat areas, streams and stream corridors, marsh and wetland areas, underground springs, surface features such as earth mounds and large rock outcroppings, significant views, natural drainage on the subject property and adjacent properties, areas of special flood hazard and potential geologic hazards such as areas of mass movement and soil hazards. Identify proposed alterations to natural features;

RESPONSE: The site does not include any natural features of note aside for the abutting river. The river is shown and labeled on the included drawings. This criterion is therefore met.

(E) Location, dimensions and names of all proposed rights-of-way and all existing rights-of-way within or adjacent to the subject property. Include proposed new curbs and sidewalks. Include existing curbs and sidewalks where necessary to show a connection to new curbs and sidewalks;

RESPONSE: All rights-of-ways have been labeled on the included drawings. The submitted civil drawings depict any work proposed within the rights-of-way. This criterion is therefore met.

(F) Location and dimensions of existing and proposed easements, to which property they are conveyed and for what purpose(s). Include easements on the subject property and off-site easements conveyed to the subject property;

RESPONSE: All easements associated with the project have been shown in the included Preliminary Plat drawing. This criterion is therefore met.

(G) Identification of existing uses of the subject property, including the location and exterior dimensions of existing structures. Identify whether existing structures will remain on the property or be removed;

RESPONSE: The site is currently undeveloped and does not include any existing structures. This criterion does not apply.

(H) Location of proposed and existing utilities on the subject property and the location of adjacent off-site utilities to which on-site utilities will connect. Include water, sanitary sewer, storm drainage, gas, electric (including power poles) and other utilities;

RESPONSE: All utilities, existing and proposed, have been shown on the included civil utility plan. This criterion is therefore met.

(I) Location and exterior dimensions of all proposed structures;

RESPONSE: Dimensions of all proposed structures can be found on the included site plan, floor plan and elevation drawings. This criterion is therefore met.

(J) Relation of the subject property to nearby transit stops;

RESPONSE: The closest transit stops have been shown on the included vicinity map. This criterion is therefore met.

(K) Location and dimensions of individual parking spaces, parking lot access aisles, driveways and pedestrian and bicycle circulation;

RESPONSE: The submitted site plan is full dimensioned and provides the sizes of parking spaces, vehicular maneuvering aisles and access as well as pedestrian circulation routes. This criterion is therefore met.

(L) Lighting (include type);

RESPONSE: A lighting and photometrics plan has been submitted. Refer to Sheets E1.00 and E1.01. This criterion is therefore met.

(M) Service areas for trash disposal, recycling, loading and delivery and bicycle parking;

RESPONSE: All areas are shown on the included site plan, Sheet A101. This criterion is therefore met.

(N) Location of potential noise sources in the proposed development;

RESPONSE: At this time there are no anticipated major sources of noise aside from the standard vehicular traffic that will visit the site. This criterion does not apply.

(c) Grading Plan: The preliminary grading plan shall indicate where and to what extent grading will occur and shall include approximate proposed contour lines, slope ratios, slope stabilization proposals and natural resources protection proposals. Existing contour lines shall also be shown. Proposed and existing contour lines shall be shown at maximum intervals of two feet (2') for slopes less than ten percent (10%), five feet (5') for slopes between ten (10) and twenty percent (20%) and ten feet (10') for slopes exceeding twenty percent (20%). A slope analysis shall be provided showing portions of the site according to the following slope ranges: less than ten percent (10%), ten (10) to less than twenty percent (20%), twenty (20) to less than thirty-five percent (35%), thirty five percent (35%) to less than fifty percent (50%) and fifty percent (50%) or greater. Approximate area calculations shall be provided for each of these slope ranges.

RESPONSE: A civil plan containing of the required information has been submitted with this narrative. This criterion is therefore met.

(d) Architectural Drawings:
(A) Building elevations and sections;
(B) Building materials, including color and type;
(C) Sufficient architectural details pertaining to exterior building materials, including samples and views from roads and other properties, as

determined by the City Administrator or designee, to assure compliance with 17.44.020(4);

(D) Floor plans.

RESPONSE: All of the requested Architectural drawings have been included with the submittal. This criterion is therefore met.

(e) Landscape Plan: The landscape plan shall be at the same scale as the site plan and shall include:

(A) Lot lines and adjacent rights-of-way;

(B) Proposed structures and existing structures to remain;

(C) Parking and loading areas and driveways;

(D) Locations of proposed plants and existing plants to remain, keyed to a legend identifying botanical names, common names, sizes at planting and numbers;

(E) Description of soil conditions and plans for soil treatment such as stockpiling of topsoil. Include plant selection requirements relating to soil conditions;

(F) Erosion controls, including plant materials and soil stabilization, if any;

(G) Irrigation systems;

(H) Landscape-related structures such as fences, terraces, decks, patios, shelters, play areas, etc.;

(I) Boundaries of open space, recreation or reserved areas to remain, access to open space and any alterations proposed;

(J) Locations of pedestrian and bikeway circulation within landscaped areas;

(K) Method of planting and maintenance.

RESPONSE: A full landscape plan with all of the above required information has been included with the submittal. This criterion is therefore met.

(f) Signs:

(A) Freestanding signs:

(i) Location on-site plan;

(ii) Elevation drawing (indicate size, total height, height between bottom of sign and ground, color, materials and means of illumination).

(B) On-building signs:

(i) Building elevation with location of sign (indicate size, color, materials and means of illumination);

(ii) Site plan showing location of on-building sign in relation to adjoining property.

RESPONSE: The proposed freestanding sign is located to the east of the new access on the development site. The freestanding sign is shown on the included architectural site plan Sheet A101. At this time, this application only requests on-building signage for the fitness use. Those signs are shown on the included fitness building elevations. This criterion is therefore met.

(2) A transportation impact analysis shall be submitted if deemed necessary by the City Administrator or designee to assess the impacts of the proposed development.

RESPONSE: A full TIA was prepared by Oregon licensed traffic engineers from Kittelson and Associates; refer to the included TIA. This criterion is therefore met.

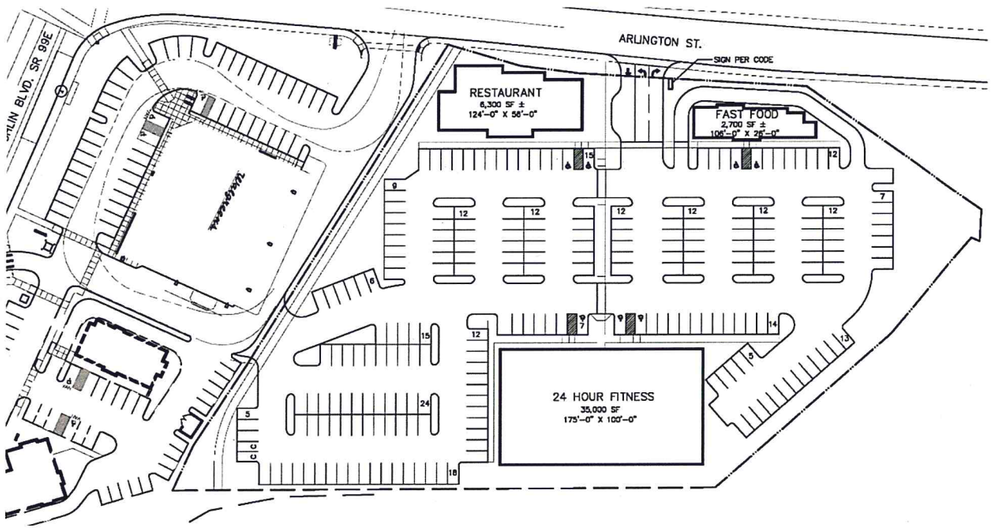
17.80.080 Maintenance.

All approved on-site improvements shall be the ongoing responsibility of the property owner or occupant.

RESPONSE: The contact purchaser (and future owner) is an experienced land owner. They have a history of successfully developing and operating similar sites. Multiple revenue sources provide a steady source of income for the property owner insuring that the property is maintained according to accepted and required standards at all times.

HCA MAP VERIFICATION
Arlington Retail Site

Lots 22E20 - 00600, 00601 and 00602
In Gladstone, Oregon



Evaluated by: John McConnaughey, PWS

ETC Job EVA15011

November 2015

Prepared for:
Baysinger Partners Architecture
1006 SE Grand Ave., Suite 300
Portland, OR 97214

Environmental Technology Consultants
PO Box 821185
Vancouver, WA 98662
A Division of Sisul Enterprises, Inc.
(360) 696-4403 Fax: (503) 657-5779
WA Landscape Contractors License #: ENVIRTCO23RB
Web: www.etcEnvironmental.net
Email: etc@etcEnvironmental.net

"Creating Tomorrow's Environment - Today"

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Photo 1. (Cover Page). Development plan for Baysinger Partners Arlington Retail Site.

INTRODUCTION

This report provides a map verification for the Habitat Conservation Area District, (HCA), per the City of Gladstone Municipal Code, (GMC). GMC Section 17.25.090 requires the applicant to determine if a mapping error was made when mapping the HCA on the affected property. The applicant may accept the mapping as is, or determine the error per the procedure outline in the GMC.

This report requests an HCA mapping correction for two reasons:

- Per GMC 17.25.090.A.2 – An analysis of aerial photos from 2002 shows the subject parcel was cleared, and that the HCA map may have been based on street trees and ornamental shrubbery that do not meet the criteria for the HCA boundaries as drawn.
- Per GMC 17.25.090.A.3 – The subject property was lawfully developed between August 1, 2002 and December 8, 2009.

QUALIFICATIONS OF JOHN MCCONNAUGHEY

I earned a Bachelor of Science degree from the University of Oregon in 1978 and in 1984 I earned a Masters of Fisheries Science degree from the University of Alaska at Juneau, (since renamed the University of Alaska, Southeast). The Juneau curriculum specializes in the study of Pacific salmon. I held positions with agencies tasked with salmon research and management beginning with summer jobs in 1979 in Rogue River, the Oregon Dept of Fish and Wildlife, and then with the Alaska Department of Fish and Game in Ketchikan Alaska, in 1980. I worked on salmon projects with ADF&G in Anchorage and Juneau for 5 years before moving to American Samoa to serve as a fisheries projects leader for the Department of Marine and Wildlife Resources. Upon returning stateside, I worked for the Yakama/Klickitat Fisheries Project out of Yakima Washington for 5 years leading four research projects studying aspects of salmon supplementation projects in the Yakima River.

I have been employed with Environmental Technology Consultants for the past 6 years. In 2010 I earned certification as a Professional Wetland Scientists, (PWS) from the Society of Wetlands Scientists, (SWS).

No part of my compensation is dependent on the outcome of my investigations or conclusions I may draw from the observed data.

Methods

I am familiar with this site. As this property is close to my office, I have made numerous trips past it over the past five years. I also performed a habitat survey, and a estimation of impact to endangered species for a neighboring property now developed as a Black Rock Coffee stand. And a couple years ago I collected GPS data in connection with mapping storm water facilities for the city of Gladstone. There is a storm water outfall on the Clackamas River near the property, which I accessed by crossing the property.

An HCA data set in CAD format for Clackamas County was provided to us by the County Planning Department, and this data set shows property lines, HCA areas, floodways, wetlands, and WQRA areas.

Aerial photos were acquired from Google Earth and these provided sufficient historical aerials to satisfy the requirements of GMC Chapter 17.25 for this report.

Site visits and a wetland determination were conducted on two site visits during the week of November 16, 2015.

Subject Properties.

This report includes three contagious tax lots last platted in 2008. Seven Hills proposes to develop these lots as a commercial location containing three buildings and 232 parking spaces. The applicants intend to replat the property into 3 lots and 1 undeveloped tract through modification of interior lot lines. There will be one lot for each of the buildings, and a fourth as a dedicated conservation easement along the river.

The property is currently comprised of three tax lots numbered 600, 601 and 602. These lots are reflected in all online sources including www.PortlandMaps.com, Clackamas County CMap online database and other online sources, including the property as mapped in the HCA data base. These lots were replatted in 2008 and given the lot numbers 600, 601 and 602 at that time. The grading permit from 2002 calls the lots out as 7200, 7300 and 600. Some documents refer to these properties as a single lot #600 when referring to the whole development. At the time of the grading permit the total site area was 6.0 acres, and is thus listed on the Grading Permit as six acres; however, during the 2008 replat some land area was dedicated to the abutting eastern parcel thus reducing the overall site area for the three properties to approximately 5.10 acres. As part of the currently proposed replat the site area will be further reduced to approximately 4.03 acres after the creation and dedication of the approximately 1.09 acre riverfront conservation parcel.

The September 12, 2002 grading permit is an important document in support of this application as it demonstrates the property was legally filled and graded, and thus meeting GMC section 17.25.090.A.3.

This report will refer to the property as Lot 600, which will be taken to include the following lots listed on the Clackamas County Assessor's database, cmap.clackamas.us, and the HCA data base:

Table 1. The subject property as shown in the HCA data base as of 2013, and the current data base at cmap.clackamas.us

Property ID	State ID	Acres
00529869	22E20 00600	0.762
05021082	22E20 00601	0.29
05021083	22E20 00602	4.01
TOTAL		5.062

Current and Past Uses:

Aerial photos going back to 1994 do not show any structures on the property, however it appears to have been kept clear through semi-annual clearing efforts, and the 2002 aerial shows several dump truck piles of material. This work continued in 2003 and appears to have reached a maximum in 2004 when the upper parts of the site were entirely graded. From 2004 through about 2012 it looks like the vegetation was controlled, but little other work was done, although we know from permit applications effective December 1, 2010 that a firm by the name of Parker Landing LLC was attempting to develop the site. In 2012 someone started dumping large volumes of wood chips on a bench area near the river.

Map Verification Per GMC 17.25.090

The Clackamas County HCA Map Verification application form was used because the City of Gladstone does not have a HCA Map Verification form and this form is utilized to describe the

submittal requirements for this report. The Clackamas County HCA Map Verification application form lists the following submittal requirements, listed below in AgencyFB Font, with our response in Times New Roman font:

1. A completed land use application on a form provided by the County Planning Division.

To be submitted separately from this report

2. A summer 2002 aerial photograph of the subject property, with lot lines shown, at a scale of at least one map inch equal to 50 feet for lots of 20,000 or fewer square feet, and a scale of at least one map inch equal to 100 feet for larger lots (available from the Metro Data Resource Center, 600 N.E. Grand Ave., Portland, OR 97232; 503-797-1742).

Three aerial photos from Google Earth are provided. A Google Earth add-on was used to project property boundaries onto aerial photos.

The aerials photos provided are:

- April 2002
- September 11, 2002
- July 20, 2004

A topographic survey performed June 2, 2015 was used in answer to HCA questions involving slopes.

These aerials show extensive grading and filling activity beginning in 2002 which are consistent with the grading permit displayed as Appendix "A".

3. For an application filed pursuant to Subsection 706.09(A)(2), provide the items listed under Subsection 706.07(B)(3).

Clackamas section 706.09(A)(2) is equivalent to GMC 17.25.090(A)(2), for HCA modifications as a result of a mapping error. This application appears to be a correction of a mapping error as described by this code section.

4. For an application filed pursuant to Subsection 706.09(A)(3), provide the items listed under Subsection 706.07(B)(4).

Clackamas section 706.09(A)(3) is equivalent to GMC 17.25.090(A)(3), to show that the property was lawfully developed between August 1, 2002 and December 8, 2009. GMC 17.25.070.B.4 is the submittal requirements equivalent to Clackamas section 706.07(B)(4), and is copied below:

17.25.070.B.4. For an application filed pursuant to Subsection 17.25.090(A)(3):

a. A site plan of the subject property, drawn to scale and identifying the following:

i. Location and type of existing development, including but not limited to, building footprints, roads, driveways, parking areas, utilities, onsite sewage disposal systems, wells, landscaping, and filling or grading in an amount greater than 10 cubic yards. Label the elements that were developed after August 1, 2002;

Please refer to Figure 4 for the above items, and the responses detailed below:

i. The existing development consists of fill material and grading permitted by the permit shown in Appendix "A". GMC Section 17.25.030.E includes in the definition of a development "fill or grading in excess of 10 yards". The permit allows 20,000 yards of fill, and it is evident that the amount of fill and grading on the property is in great excess of 10 yards.

ii. Location and width of existing adjacent roads and road rights-of-ways;

ii. The roads are shown on Figure 4. Existing right of Rays other than roadways are not known.

iii. Location of the HCA as shown on the HCA Map, including off-site HCA where review is required due to proposed development within 100 feet outside the HCA boundary and including the location of High, Moderate, and Low HCA; and

iii. The HCA areas on the property as currently shown in the HCA data base are shown on Figure 4, and listed below:

Table 2. HCA areas on lots as currently mapped in the HCA database. Lot acreages are from tax lot records, and HCA areas are from the HCA data base.

Property ID	State ID	Lot area (Acres)	Acres of HCA on Lot			
			High	Moderate	Low	Total HCA
C162469	22E20 00600	0.762	0.033	0.712	-	0.744
C437026	22E20 00601	0.285	-	0.204	-	0.204
C438167	22E20 00602	3.998	2.950	0.747	0.240	3.936
TOTAL		5.046	2.982	1.662	0.240	4.884

iv. Location of the HCA as proposed by the applicant, including the location of High, Moderate, and Low HCA;

iv. Locations of HCA areas as proposed by the applicant. Please refer to Figure 5. The applicant proposes to re-plat the property by redrawing the interior lot lines creating 3 lots and 1 tract. Tract "A" is the areas within about 100FT of OHW, and will be designated as a conservation area and will remain as "high HCA". It contains all remaining riparian areas of the property. The remaining portions of the lot will be removed from the HCA as previously developed areas.

b. A summer 2005 aerial photograph of the subject property (or, if available, an aerial photograph taken closer to, but not after, December 8, 2009), with lot lines shown, at a scale of at least one map inch equal to 50 feet for lots of 20,000 or fewer square feet, and a scale of at least one map inch equal to 100 feet for larger lots (available from the Metro Data Resource Center, 600 N.E. Grand Ave., Portland, OR 97232; 503-797-1742);

Figure 4 shows an aerial photo from June 22, 2009.

c. Any approved development permits (e.g. building, grading, land use) and site plans related to the development of the property that took place between August 1, 2002, and December 8, 2009; and

Please see Appendix "A" for the 2002 grading permit allowing fill of 20,000 yards of material on the site.

Please see Appendix 'B" for the 2010 1201-C permit allowing clearing, grading, excavation, and stockpiling of materials to one or more acres of lot 600 in Gladstone. It appears that only some clearing and grading activities were exercised under this permit, that the construction activities never took place.

d. A narrative that correlates with the submitted site plan and development permits and identifies the type and scope of the new development that has occurred and the previously identified habitat that no longer exists because it is now part of a developed area; and

An examination of the site and the aerial photos provided show convincing evidence that the activities allowed by the permits did in fact remove the vegetation that was the basis of the HCA designations, and also did fill more than 10 yards of material on the site to classify it as a development.

Obviously the permittees involved with these project intended to develop the project known as "Parker Landing" as a retail center, not too dissimilar to the current "Arlington Retail" application. However, economic circumstances beyond their control caused the project to become delayed and finally cancelled.

5. For an application filed pursuant to Subsection 706.09(A)(4), (GMC 17.25.090.A.4) provide the items listed under Subsection 706.07(B)(5).

This section does not apply. The identified HCA changed by this application is not riparian habitat, nor is it publicly-owned upland habitat.

APPENDIX A

2002 Grading Permit

3 PAGES

GRADING PERMIT FROM 9/12/2002
PAGES 1 THROUGH 3 OF 10 PAGES COPIED HERE, REMAINING PAGES AVAILABLE ON REQUEST.

Grading Permit Application

Clackamas County

9101 SE Sunnybrook Blvd., Clackamas, OR 97015
Phone: (503) 353-4400, FAX: (503) 353-4741
Internet address: www.co.clackamas.or.us

Land use approval: _____

OFFICE USE ONLY			
Date received:	Permit no.:		
Project/appl. no.:	Expire date:		
Date issued:	By:	Receipt no.:	
Case file no.:	Payment type:		

TYPE OF PERMIT

☐ 1 & 2 Family Dwelling or Accessory ☑ Commercial/Industrial ☐ Grading
☐ New Construction ☐ Multi-Family ☐ Other: _____

JOB SITE INFORMATION

Job Address: 475 W. ARLINGTON ST. GLADSTONE, OR. Bldg. No.: —
Nearest Cross Street: CLACKAMAS BLVD.
Legal Description: TAX LOT 7200, 7300 & 600 T2S, R2E, SEC 28CC
Project name: PARKER FILL City/Co: GLADSTONE Zip
Intended Use of Filled Area: _____
Description and location of work on premises/special conditions: PLACEMENT OF STRUCTURAL FILL

OWNER

Name: THE ESTATE OF JACK W. PARKER
Mailing address: P.O. BOX AF
City: SCAPPOOSE State: OR ZIP: 97056
Phone: 503-543-8821 Fax: 503-747-7 E-mail:
Owner's representative: DON VEDDER
Phone: 503-656-1160 Fax: 657-0175 E-mail:

CONTRACTOR

Name: ERICKSON HEAVY CONSTRUCTION
Address: 15720 SOUTH HARLOW RD.
City: OREGON CITY State: OR ZIP: 97045
Phone: 655-3478 Fax: E-mail:
CCB no.: 63443 City/metro lic. no.:

Notice: All contractors and subcontractors are required to be licensed with the Construction Contractors Board of the State of Oregon under provisions of ORS 701 and may be required to be licensed in the jurisdiction where work is being performed, or, the applicant is exempt from licensing, the following reason:

_____

Lot Size: TAX LOT 600 = 6.0 AC. TAX LOT 7300 = 1.64 AC.
Cubic Yards of Material: 21,000 cy
Water Source: CITY OF GLADSTONE
Sewage Disposal System: ☐ septic ☑ sewer

Submit 5 sets of plans & one geotechnical report (if applicable). Plans shall include the following:

1. To-scale plot plan showing existing and proposed development, including features such as proposed and existing buildings, roads, utilities, septic system or septic approval location, drainage ways and rivers.
2. Sufficient cross sections to accurately represent proposed work.

The signer grants County employees access to the property in question for the purpose of completing this review, and follow up inspections, as required.

I hereby certify I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not.

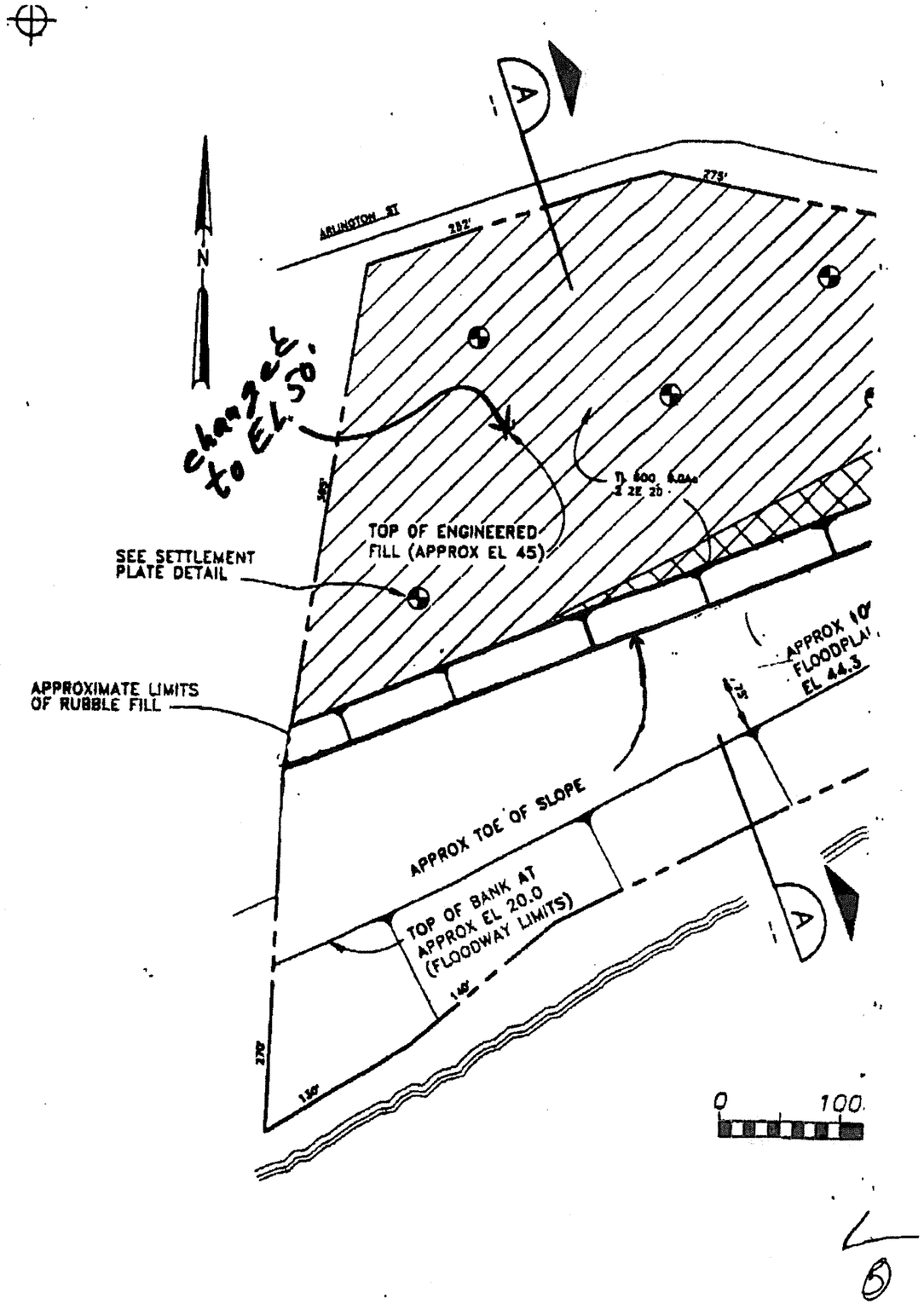
Authorized signature: [signature] Date: 9/12/02
Print name: SCOTT T. PARKER

OFFICE USE ONLY

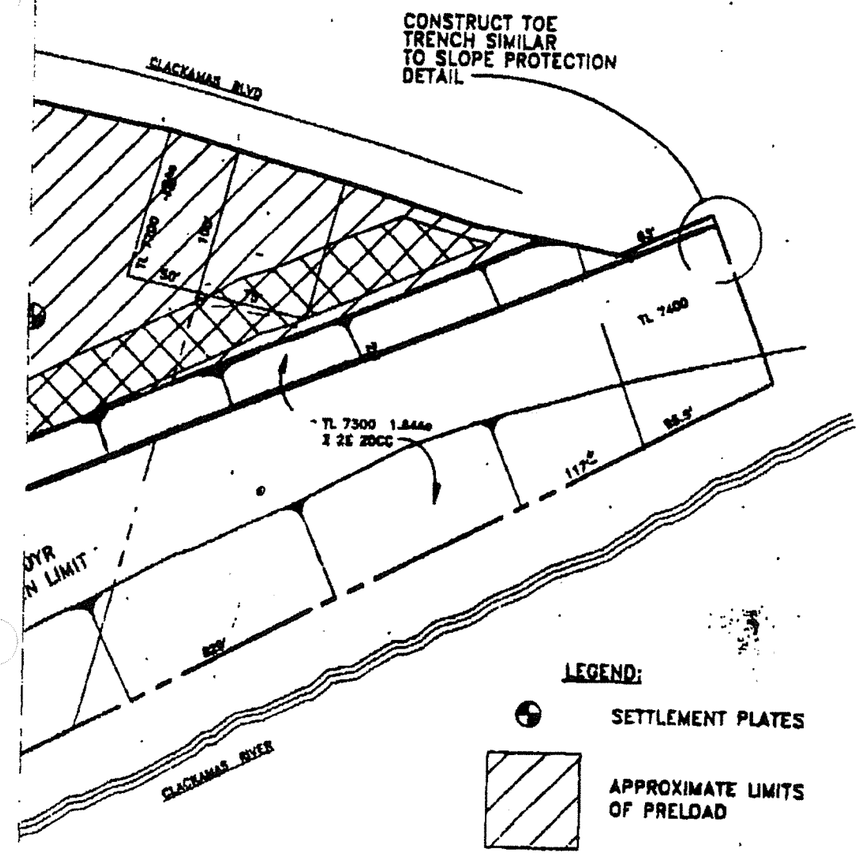
Minimum Fee ..... $ _____
Plan Review Fee ..... $ _____
TOTAL ..... $ _____

Notice: This permit application expires if a permit is not obtained within 180 days after it has been accepted as complete.

(Rev. 4/01)


A
N
ARLINGTON ST
282'
775'
change to EL 50'
TOP OF ENGINEERED FILL (APPROX EL 45)
SEE SETTLEMENT PLATE DETAIL
APPROXIMATE LIMITS OF RUBBLE FILL
APPROX TOE OF SLOPE
TOP OF BANK AT APPROX EL 20.0 (FLOODWAY LIMITS)
140'
270'
130'
0
100
A

6



LEGEND:

- SETTLEMENT PLATES
- APPROXIMATE LIMITS OF PRELOAD
- APPROXIMATE LIMITS OF RUBBLE FILL

SITE PLAN

200 300 400

SCALE: 1"=100'

APPENDIX B

2010 1200C Storm Water Discharge Permit

2 pages.

1200-C permit from 2010.
Pages 1 and 2 of 27 total pages provided. Full document is available on request.

GENERAL PERMIT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
STORMWATER DISCHARGE PERMIT

Oregon Department of Environmental Quality
811 SW Sixth Avenue, Portland OR 97204
Telephone: (503) 229-5279 or 1-800-452-4011 (toll free in Oregon)

Issued pursuant to ORS 468B.050 and Section 402 of the Federal Clean Water Act

REGISTERED TO: 7/30/12 GEN12C Clackamas/NWR
File Number: 112041 EPA Number: ORR108050

Parker Landing, LLC
PO Box 2200
Oregon City, OR 97045

Site: Parker - Gladstone

SOURCES COVERED BY THIS PERMIT:

- Construction activities including clearing, grading, excavation, materials or equipment staging and stockpiling that will disturb one or more acres and may discharge to surface waters or conveyance systems leading to surface waters of the state.
- Construction activities including clearing, grading, excavation, materials or equipment staging and stockpiling that will disturb less than one acre that are part of a common plan of development or sale if the larger common plan of development or sale will ultimately disturb one acre or more and may discharge to surface waters or conveyance systems leading to surface waters of the state.
- This permit also authorizes discharges from any other construction activity (including construction activity that disturbs less than one acre and is not part of a common plan of development or sale) designated by DEQ, where DEQ makes that designation based on the potential for contribution to an excursion of a water quality standard or for significant contribution of pollutants to waters of the state.

This permit does not authorize the following:

- In-water or riparian work, which is regulated by other programs and agencies including the Federal Clean Water Act Section 404 permit program, the Oregon Department of State Lands, the Oregon Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, the U.S. Army Corp of Engineers, the National Marine Fisheries Service, and the Department of Environmental Quality Section 401 certification program.
- Post-construction stormwater discharges that originate from the site after completion of construction activities and final stabilization.
- Discharges to underground injection control (UIC) systems.

Neil Mullane

Neil Mullane, Administrator
Water Quality Division

Effective: December 1, 2010
Expiration Date: November 30, 2015

PERMITTED ACTIVITIES

Until this permit expires, is modified or revoked, the permit registrant is authorized to construct, install, modify, or operate erosion and sediment control measures and stormwater treatment and control facilities, and to discharge stormwater and certain specified non-stormwater discharges to surface waters of the state or conveyance systems leading to surface waters of the state in conformance with all the requirements, limitations, and conditions set forth in the permit including attached schedules as follows:

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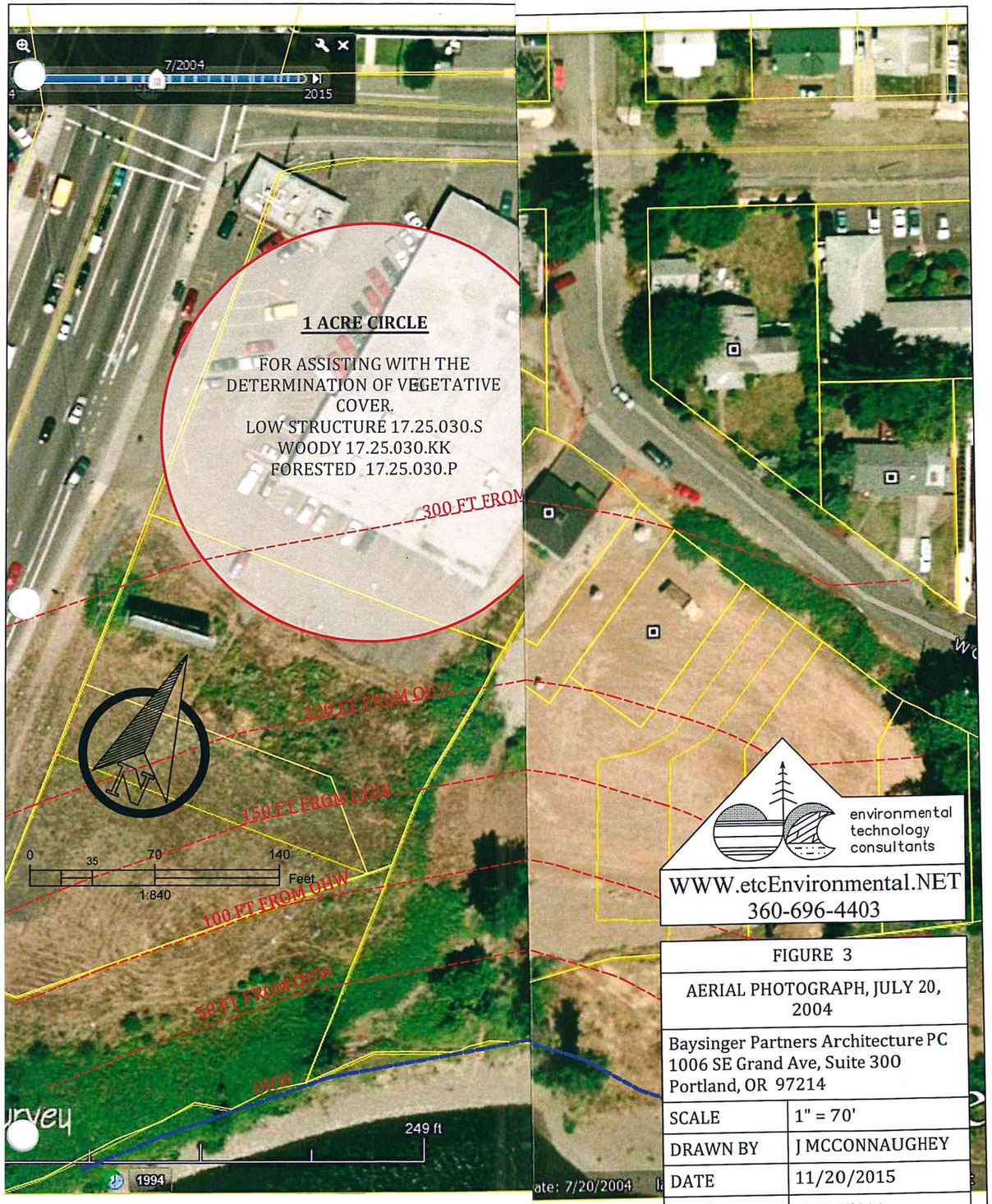
APPENDIX C

Figure 1 – April 2002 Aerial
Figure 2 - July 2002 Aerial
Figure 3 – July 20, 2004 Aerial
Figure 4 – Site Plan Showing Existing Development
Figure 5 – Proposed Revised HCA
Figure 6 – Topo Map.

FIGURE 1	
AERIAL PHOTOGRAPH, APRIL 2002	
Baysinger Partners Architecture PC 1006 SE Grand Ave, Suite 300 Portland, OR 97214	
SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

FIGURE 2	
AERIAL PHOTOGRAPH, JULY 2002	
Baysinger Partners Architecture PC 1006 SE Grand Ave, Suite 300 Portland, OR 97214	
SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011



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360-696-4403

FIGURE 3	
AERIAL PHOTOGRAPH, JULY 20, 2004	
Baysinger Partners Architecture PC 1006 SE Grand Ave, Suite 300 Portland, OR 97214	
SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

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FIGURE 4

SITE PLAN SHOWING EXISTING DEVELOPMENT AS OF DECEMBER 8, 2009, WITH THOSE AREAS DEVELOPED AFTER AUGUST 1, 2002 LABLED.
AERIAL PHOTOGRAPH, JUNE 22, 2009

Baysinger Partners Architecture PC
1006 SE Grand Ave, Suite 300
Portland, OR 97214

SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

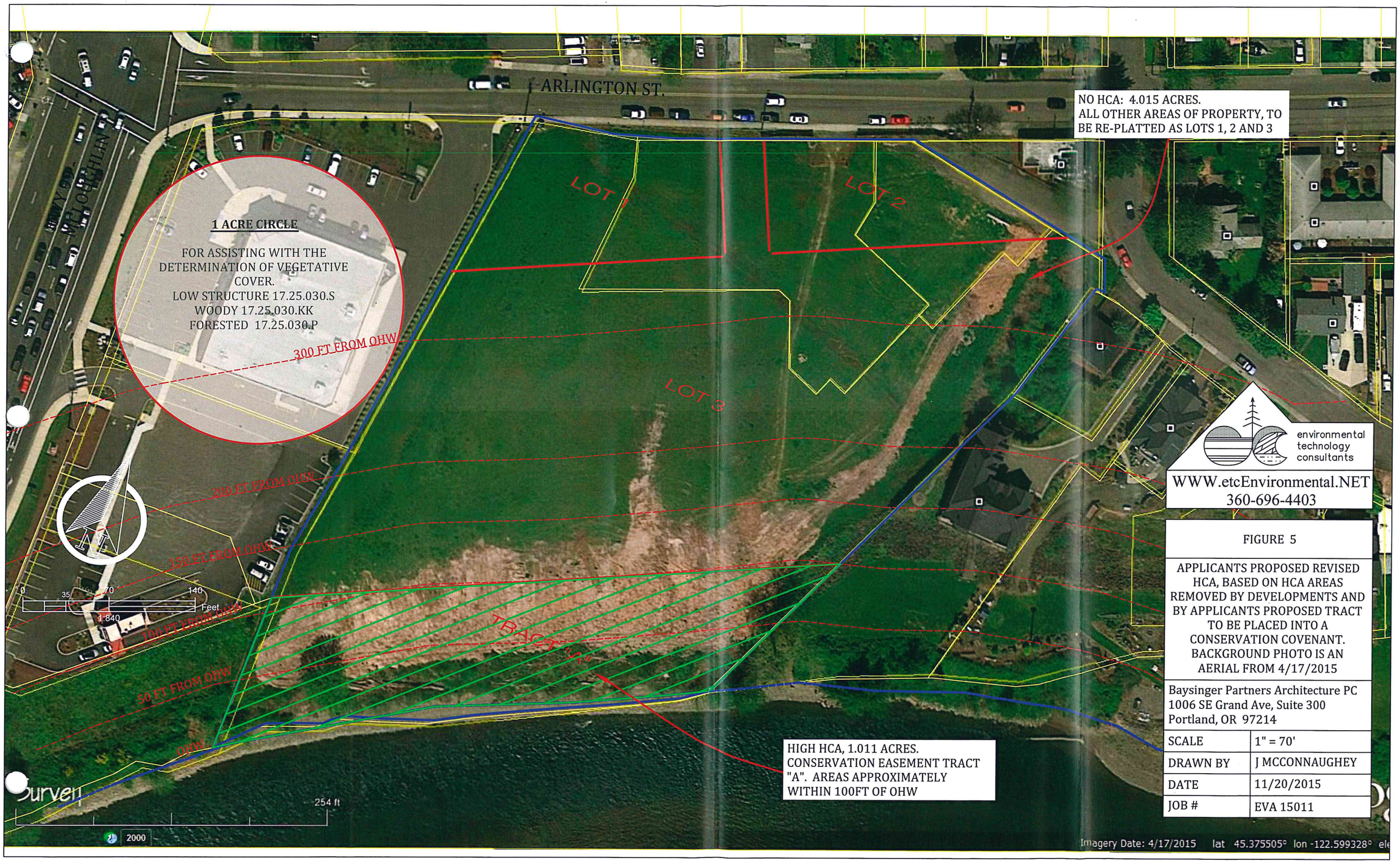

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FIGURE 5

APPLICANTS PROPOSED REVISED HCA, BASED ON HCA AREAS REMOVED BY DEVELOPMENTS AND BY APPLICANTS PROPOSED TRACT TO BE PLACED INTO A CONSERVATION COVENANT. BACKGROUND PHOTO IS AN AERIAL FROM 4/17/2015

Baysinger Partners Architecture PC
1006 SE Grand Ave, Suite 300
Portland, OR 97214

SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
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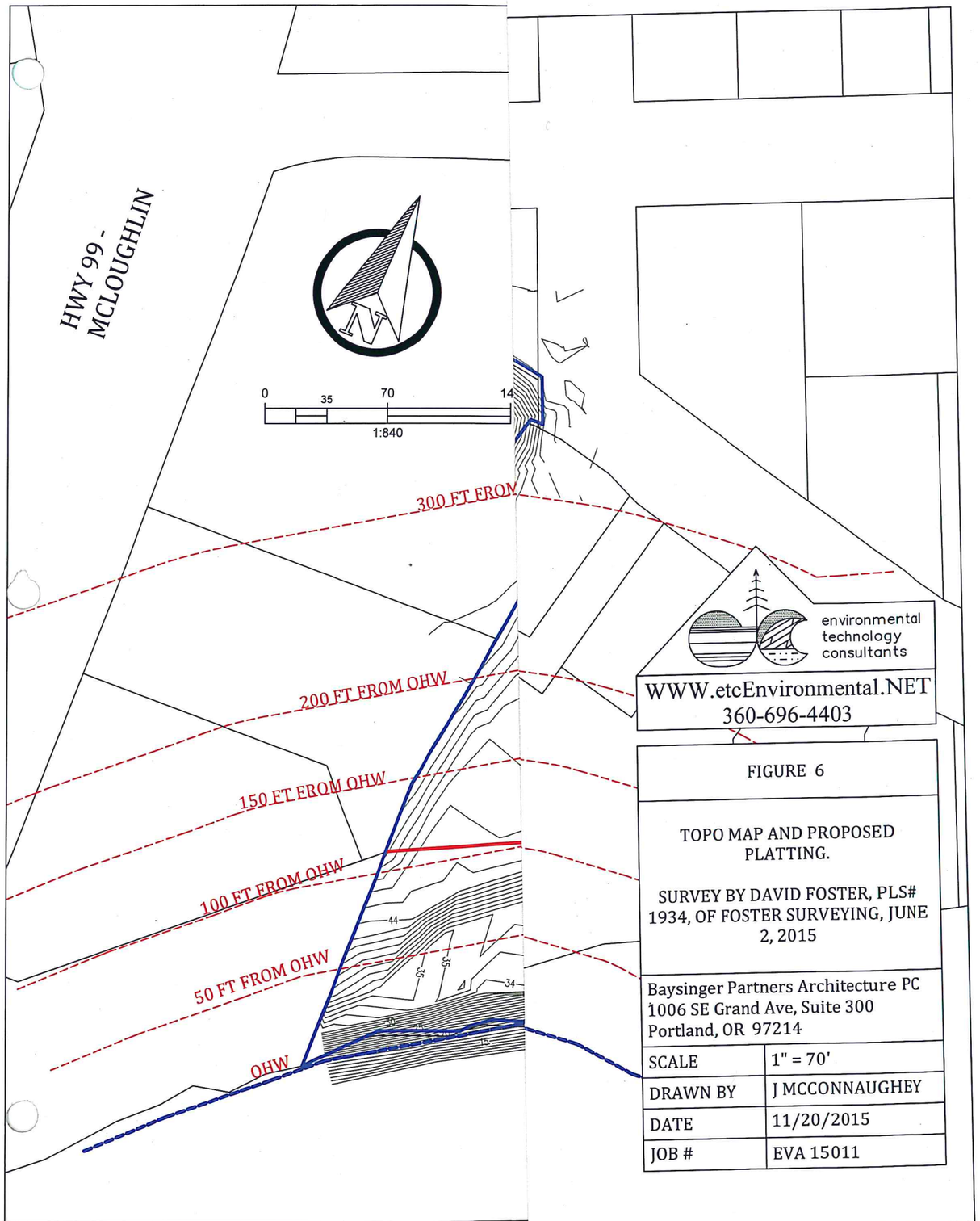

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FIGURE 6

TOPO MAP AND PROPOSED PLATTING.

SURVEY BY DAVID FOSTER, PLS# 1934, OF FOSTER SURVEYING, JUNE 2, 2015

Baysinger Partners Architecture PC
1006 SE Grand Ave, Suite 300
Portland, OR 97214

SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

APPENDIX D) Literature Citations

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Chapter 17.25 HCAD—HABITAT CONSERVATION AREA DISTRICT

RESPONSE: As detailed elsewhere in this application, the subject property was partitioned into three (3) parcels (Parcels 1, 2 and 3) through Partition Plat 2008-063. The applicant proposes a replat that will result in three (3) developable lots (Lots 1, 2 and 3) and one (1) tract (Tract A) for conservation purposes. The responses to Chapter 17.25 will refer to the lots and tract as proposed, not the existing 3 parcels.

17.25.020 Area of application.

A. Chapter 17.25 applies in the Habitat Conservation Area District (HCAD). The HCAD applies to all parcels containing a Habitat Conservation Area (HCA). The HCAD also applies to any area that is less than 100 feet outside the boundary of an HCA even if the area is not located on the same parcel as the HCA. HCAs are identified on maps adopted by reference in Chapter 6 of the Comprehensive Plan (hereinafter referred to as the HCA Map) and are categorized as High, Moderate, or Low HCA.

RESPONSE: The proposed Lots 1-3 and Tract A contain HCA areas per the County map.

B. An applicant may dispute the location of an HCA by submitting an application for HCA Map Verification pursuant to Section 17.25.060(B) or by applying for a Comprehensive Plan amendment to modify the HCA Map. HCA Map Verification does not amend the Comprehensive Plan.

RESPONSE: The submitted materials include an application for a HCA Map Verification as work performed under an August 12, 2002 grading permit qualify as "development" and the boundary therefore inaccurate per the allowance of Section 17.25.090(A)(3). Refer to the included HCA Report for detailed information and exhibits.

C. Development within an HCA in accordance with the provisions of Chapter 17.25 shall not result in removal of such developed areas from the HCA and shall not change the applicable HCA category.

RESPONSE: At completion of the included HCA Map Verification the only remaining HCA area will be within Tract A, a 100 feet wide river front conversation tract. All development proposed with the concurrent design review will occur on Lots 1-3, which are outside of the new HCA boundary. Therefore, the project does not include development with an HCA.

17.25.050 Prohibited uses.

The following uses and activities are prohibited within a Habitat Conservation Area:

A. The planting of invasive non-native or noxious vegetation; and
B. Outside storage of materials and equipment, unless such storage began before December 8, 2009 or is approved pursuant to review under Subsection 17.25.060.06(C).

RESPONSE: The project does not include the installation of any invasive, non-native or noxious vegetation nor does it include outside storage. This criterion is therefore met.

17.25.060 Development review requirements.

The following review requirements are applicable to development in the Habitat Conservation Area District (HCAD) unless such development is exempt pursuant to Section 17.25.040.

A. A Construction Management Plan (CMP), consistent with Section 17.25.080, shall be required for development in the HCAD, regardless of whether development will occur within an HCA. However, if an area is in the HCAD solely because it is less than 100 feet outside the boundary of an HCA located on a different parcel, Subsection 17.25.060(A) shall not apply unless HCA Map Verification required pursuant to Subsection 17.25.060(B) determines that an HCA exists on the same parcel as the area for which development is proposed. An application for a CMP shall be reviewed pursuant to one of the following processes:
   1. The application shall be reviewed pursuant to Chapter 17.90(C); or
   2. The application shall be filed concurrently with an application for review under Subsection 17.25.060(B) or 17.25.060(C), in which case the applications will be consolidated and reviewed pursuant to the process required by Subsection 17.25.060(B)(4) or 17.25.060(C)(3), respectively;

RESPONSE: A Construction Management Plan application is included with the submittal materials. Refer to narrative Section 17.25.080 for detailed responses. This criterion is therefore met.

B. In order to confirm the location of an HCA, HCA Map Verification, consistent with Section 17.25.090, shall be required or allowed as follows:
   1. HCA Map Verification shall be required for:
      a. Development that is proposed to be either in an HCA or less than 100 feet outside of the boundary of an HCA, as shown on the HCA Map; or
      b. A parcel that:
         i. Either contains an HCA, or any part of which is less than 100 feet outside the boundary of an HCA, as shown on the HCA Map; and
         ii. Is the subject of a land use application for a partition, subdivision, or any other land use application the approval of which would authorize new development on the subject parcel.

RESPONSE: The proposed project is required to undergo Design Review for new construction. The application also includes a partition and property line adjustments which replat the existing three (3) parcels into three (3) developable lots and one (1) tract for public dedication and conservation purposes.

   2. An application for HCA Map Verification may be submitted even if one is not required pursuant to Subsection 17.25.060(B)(1).
   3. If a parcel is subject to Subsection 17.25.060(B)(1)(b), an application for HCA Map Verification shall be filed concurrently with the other land use application referenced in Subsection 17.25.060(B)(1)(b)(ii) unless a previously approved HCA Map Verification for the subject property remains valid.

RESPONSE: The project is subject to Subsection 17.25.060(B)(1)(b); therefore, the HCA Map Verification is required to be filed concurrently with the Design Review, Replat, Floodplain Development Permit, Construction Management Plan and WQRD Development permit applications. Enclosed please find the required materials as specified in 17.25.070.

4. An application for HCA Map Verification shall be reviewed pursuant to Section 17.90.010 unless the application is filed concurrently with another land use application that requires review by the Planning Commission or City Council, in which case the applications will be consolidated and reviewed pursuant to the review provisions of Chapter 17.94.

RESPONSE: The required Design Review will go before the Planning Commission for approval; thus, the HCA Map Verification can be consolidated and reviewed pursuant to Chapter 17.94.

5. Notice required by Section 17.94.040 or 17.94.050 shall be provided to Metro and any watershed council recognized by the Oregon Watershed Enhancement Board and whose boundaries include the subject property.

RESPONSE: It is understood that noticing shall be provided to Metro and any watershed council.

C. An HCA Development Permit, consistent with Section 17.25.010, shall be required for:
   1. Development in an HCA or for a parcel that:
      a. Contains an HCA; and
      b. Is the subject of a land use application for a partition or subdivision.

RESPONSE: The proposed partition contains an HCA according the Metro Title 13 map; therefore, it is understood a permit is required.

2. If a parcel is subject to Subsections 17.25.060(C)(1)(a) and (b), an application for an HCA Development Permit shall be filed concurrently with the application for a partition or subdivision.

RESPONSE: The proposed project includes a partition. All materials for the HCA Development Permit have been included with this submittal; therefore, this criterion is met.

3. An application for an HCA Development Permit shall be reviewed pursuant to Section 17.94.050 unless the application is filed concurrently with another land use application that requires review by the Planning Commission or City Council, in which case the applications will be consolidated and reviewed pursuant to Section 17.94.040.

RESPONSE: In addition to the partition, the project is required Design Review for approval by the Planning Commission; therefore, it is understood that the HCA Development Permit will be reviewed concurrently.

D. HCA Map Verification and HCA Development Permits shall be valid for five years from the date of the final written decision, except:
   1. If development lawfully commences within the five-year time period, HCA Map Verification and HCA Development Permits shall remain valid until the development is complete or has been abandoned. Development will be considered to be abandoned if building or grading permits authorizing the development have lapsed or work not requiring a building or grading permit has been discontinued for more than one year; and

2. HCA Map Verification that was valid on the date when the final plat for a subdivision or partition was recorded with the County Clerk shall remain valid for subsequent development on the lots or parcels created by the subdivision or partition.

17.25.070 Submittal requirements.

Applications filed pursuant to Chapter 17.25 shall comply with the following submittal requirements.

A. An application for a Construction Management Plan shall include:
   1. A completed land use application on a form provided by the County Planning Division;

RESPONSE: A completed and signed Clackamas County Land Use form was submitted with payment on Monday, November 23, 2015. This criterion is therefore met.

   2. A site plan of the subject property, drawn to scale and identifying the following:
      a. Location and type of existing and proposed development, including but not limited to, building footprints, roads, driveways, parking areas, utilities, onsite sewage disposal systems, wells, landscaping, and filling or grading in an amount greater than 10 cubic yards. Label each element as existing or proposed;
      b. Location and width of existing adjacent roads and road rights-of-way;
      c. Location of the Habitat Conservation Area (HCA) as shown on the HCA Map or as identified pursuant to an approved HCA Map Verification;
      d. Drip lines outside the HCA of trees that are inside the HCA;
      e. Distance between the HCA boundary and proposed development outside the HCA;
      f. The site ingress and egress proposed to be used by construction vehicles;
      g. Proposed equipment and material staging and stockpile areas; and
      h. Proposed orange construction fencing required pursuant to Subsection 17.25.080(B);

RESPONSE: All of the above materials are provided. See subsection 17.25.070.C for detailed information as the submittal materials are similar. This criterion is therefore met.

   3. An Erosion Prevention and Sediment Control (EPSC) plan. This plan may be included on the site plan if acceptable to the EPSC regulatory authority; and

RESPONSE: An Erosion Control drawing and details is included with the submittal civil drawings. Refer to the included drawings for detailed erosion control information. This criterion is therefore met.

B. An application for HCA Map Verification shall include:
   1. A completed land use application on a form provided by the County Planning Division;
   2. A summer 2002 aerial photograph of the subject property, with lot lines shown, at a scale of at least one map inch equal to 50 feet for lots of 20,000 or fewer square feet, and a scale of at least one map inch equal to 100 feet for larger lots (available from the Metro Data Resource Center, 600 N.E. Grand Ave., Portland, OR 97232; 503-797-1742);
   4. For an application filed pursuant to Subsection 17.25.090(A)(3):
      a. A site plan of the subject property, drawn to scale and identifying the following:

i. Location and type of existing development, including but not limited to, building footprints, roads, driveways, parking areas, utilities, onsite sewage disposal systems, wells, landscaping, and filling or grading in an amount greater than 10 cubic yards. Label the elements that were developed after August 1, 2002;
ii. Location and width of existing adjacent roads and road rights-of-way;
iii. Location of the HCA as shown on the HCA Map, including off-site HCA where review is required due to proposed development within 100 feet outside the HCA boundary and including the location of High, Moderate, and Low HCA; and
iv. Location of the HCA as proposed by the applicant, including the location of High, Moderate, and Low HCA;

b. A summer 2005 aerial photograph of the subject property (or, if available, an aerial photograph taken closer to, but not after, December 8, 2009), with lot lines shown, at a scale of at least one map inch equal to 50 feet for lots of 20,000 or fewer square feet, and a scale of at least one map inch equal to 100 feet for larger lots (available from the Metro Data Resource Center, 600 N.E. Grand Ave., Portland, OR 97232; 503-797-1742);

c. Any approved development permits (e.g. building, grading, land use) and site plans related to the development of the property that took place between August 1, 2002, and December 8, 2009; and

d. A narrative that correlates with the submitted site plan and development permits and identifies the type and scope of the new development that has occurred and the previously identified habitat that no longer exists because it is now part of a developed area; and

RESPONSE: A Clackamas County application was submitted on Monday, November 23, 2015 along with payment. Refer to the submitted HCA Map Verification report for detail information and exhibits demonstrating the above materials. This criterion is therefore met.

C. An application for an HCA Development Permit under Subsection 17.25.100(A) shall include:

1. A completed land use application on a form provided by the County Planning Division;

RESPONSE: A Clackamas County application was submitted on Monday, November 23, 2015 along with payment. This criterion is therefore met.

2. A site plan of the subject property, drawn to scale and identifying the following:

a. Location and type of existing and proposed development, including but not limited to, building footprints, roads, driveways, parking areas, utilities, onsite sewage disposal systems, wells, landscaping, and filling or grading in an amount greater than 10 cubic yards. Label each element as existing or proposed;

RESPONSE: All of the above information can be found on the included architectural site plan, civil grading and erosion plan, existing conditions plan and HCA Map Verification report exhibits. This criterion is therefore met.

b. Location and width of existing adjacent roads and road rights-of-way;

RESPONSE: All of the above information can be found on the included architectural site plan, civil grading and erosion plan, existing conditions plan and HCA Map Verification report exhibits. This criterion is therefore met.

c. Location of the HCA as identified pursuant to a valid HCA Map Verification, and including the location of High, Moderate, and Low HCA;

RESPONSE: All of the above information can be found on the included HCA Map Verification report exhibits. This criterion is therefore met.

d. Location of any rivers, streams, wetlands, and flood areas;

RESPONSE: There are no streams or wetlands associated with the development area. The location of the abutting Clackamas River and flood area can be found on the included architectural site plan, civil grading and erosion plan, existing conditions plan and HCA Map Verification report exhibits. This criterion is therefore met.

e. Location of agricultural areas (e.g. pastures, orchards);

RESPONSE: Three are no agricultural area associated with the development site; therefore, this criterion does not apply.

f. Location of naturalized areas (e.g. meadows, woods);

RESPONSE: There are no naturalized areas associated with the development site; therefore, this criterion does not apply.

g. Drip lines outside the HCA of trees that are inside the HCA;

RESPONSE: There are few existing trees within the area to remain HCA at completion of the included concurrent HCA Map Verification. Their drip lines do not cross to outside the HCA area; therefore, this criterion does not apply.

h. For a property containing less than one acre of HCA, the location of all trees within the HCA that are greater than six inches diameter at breast height (DBH), identified by DBH and species. For properties containing one acre or more of HCA, the applicant may approximate the number of trees within the HCA that are greater than six inches DBH and the DBH range, and provide a listing of the dominant species;

i. The location of all trees with a DBH of six inches or greater that are proposed to be removed, identified by DBH and species;

RESPONSE: Following the HCA Map Verification, the HCA will be slightly greater than one (1) acre. The HCA will be located exclusively in Tract A, which is a river buffer conservation tract that will be dedicated to the City. No development on Tract A is proposed, and no trees within the HCA will be impacted or removed. Therefore, estimating the presence of trees in the HCA is not necessary.

j. The site ingress and egress proposed to be used by construction vehicles;

RESPONSE: Construction vehicles will use the new full turn access from Arlington onto the proposed development site (Lots 1, 2 and 3). This access is shown on all included architectural and civil drawings. This criterion is therefore met.

k. Proposed equipment and material staging and stockpile areas; and

RESPONSE: Material will be staged and stockpiled on the new parcel 1 pad (restaurant). A note speaking to such is included on Sheet A101. No stockpiles or staging will encroach with the HCA area.

l. Location of any Water Quality Resource Area regulated by Chapter 17.25;

RESPONSE: All of the above information can be found on the included architectural site plan, civil grading and erosion plan, existing conditions plan and HCA Map Verification report exhibits. This criterion is therefore met.

3. A mitigation plan that demonstrates compliance with Subsections 17.25.100(A)(6), (7), and, if applicable, (8);

RESPONSE: After completion of the included concurrent HCA Map Verification there is no proposed development with the remaining HCA area; therefore, mitigation is not required and a mitigation plan not provided. This criterion does not apply.

17.25.080 Construction management plans.

A Construction Management Plan (CMP) shall comply with the following criteria.

A. Erosion prevention and sediment control (EPSC) measures shall be required and shall comply with the standards of the EPSC regulatory authority.

RESPONSE: An Erosion control drawing and details have been included with the submittal materials. Erosion control was designed by a certified civil engineer in accordance with all applicable City of Gladstone, Clackamas County and other applicable regulatory authority standards. This criterion is therefore met.

B. Orange construction fencing (i.e. safety fencing, snow fencing, or a comparable product) shall be installed on or outside the boundary of the HCA, except where the drip line of a protected tree extends outside the HCA, in which case the drip line shall be included inside the fencing. This requirement may be modified or waived if:
   1. Disturbance of the HCA is authorized pursuant to Section 17.25.040 or 17.25.100, in which case the fencing shall be installed in such a manner as to protect the area of the HCA not authorized for disturbance; or
   2. The HCA is already lawfully developed, in which case the fencing shall be installed in such a manner as to protect any water resource that is the basis for the HCA designation and any area of the HCA where naturalized vegetative cover exists.

RESPONSE: The proposed development associated with the Construction Management Plan does not include any work within the HCA boundary (after HCA map verification and modification) or the within the WQRD. However, orange construction fencing will be placed along the boundary of the HCA to ensure that work remains outside of that area. This criterion will therefore be met.

C. Trees in the HCA shall not be used as anchors for stabilizing construction equipment.

RESPONSE: No trees with the HCA will be used as anchors. This criterion will therefore be met.

D. Native soils disturbed during development shall be conserved on the subject property.

RESPONSE: All work is proposed to be contained with the area filled previously under the 2002 Grading Permit. No work is proposed in areas where there is native soils. This criterion therefore does not apply.

E. Development shall not commence until the EPSC measures and fencing required pursuant to Subsections 17.25.080(A) and (B) are in place.

RESPONSE: Construction will not commence until all required permits and EPSC measures and fencing have been installed. This criterion will therefore be met.

F. Compliance with the CMP shall be maintained until the development is complete.

RESPONSE: All requirements of the CMP will be maintained throughout construction. This criterion will therefore be met.

17.25.090 HCA map verification.

HCA Map Verification shall be subject to the following criteria.

A. An applicant for HCA Map Verification shall use one or more of the following methods to verify the Habitat Conservation Area (HCA) boundary and, if applicable, the boundary between High, Moderate, and Low HCA.

2. The applicant may demonstrate that a computer mapping error was made in the creation of the HCA map (e.g., the mapped vegetative cover layer—which was derived from aerial photographs taken in the summer of 2002 and was used to establish the Vegetative Cover Map and the HCA Map—in Metro's geographic information system database does not align precisely with the tax lot layer, thereby resulting in an HCA Map of the subject property that is also misaligned with tax lot lines);

RESPONSE: In conjunction with subsection 3 below this application is to correct a map error.

3. The applicant may demonstrate that the subject property was developed lawfully between August 1, 2002 (when the taking of the aerial photographs used to determine the regional habitat inventory commenced) and December 8, 2009 and, therefore, that the HCA boundary or category (High, Moderate, or Low) is inaccurate; or

RESPONSE: The included HCA Map Verification report and exhibits demonstrate that the property was lawfully developed, as provided by Section 17.25.090.A.3. The City defines "development" as any manmade change defined as ... filling or grading in amounts greater than 10 cubic yards." A grading permit approved on September 12, 2002 indicates that 21,000 cubic yards of fill material was expected. Grading which was lawful under that permit occurred, as shown on the enclosed 2004 aerial photo, which depicts ongoing grading activity on site and vegetation cleared from the site. Following the completion of the grading, FEMA confirmed on October 21, 2008 that fill was added to the site bringing it above the flood level.

All of the grading and vegetation removal development on site was lawful, and occurred within the August 1, 2002 to December 8, 2009 allowed time frame. This lawful development is a basis for modifying the HCA as detailed in the HCA Map Verification report.

B. The Planning Administrator, or if the application is reviewed pursuant to the Planning Commission provisions of Chapter 17.94 the Planning Commission, shall determine the location of any HCA on the subject property by considering information submitted by the applicant, information collected during any site visit that may be made to the subject property, information generated by prior HCA Map Verification that has occurred on adjacent properties, and any other relevant information that has been provided.

RESPONSE: Based upon the detailed information in the HCA Map Verification report, we request that the City determine that the HCA is located exclusively within Tract A, which is the undevelopable river buffer conservation tract that will be dedicated to the City.

C. For applications filed pursuant to Subsection 17.25.090(A)(1) or (2), the HCA Map shall be deemed to be accurate unless, as described in Subsection 17.25.090(A)(2), there was a computer mapping error (e.g., an alignment error) made in the creation of the HCA map.

RESPONSE: In conjunction with subsection D below this application is to correct a map error.

D. For applications filed pursuant to Subsection 17.25.090(A)(3), developed areas not providing vegetative cover shall be removed from the HCA, provided that they were developed lawfully between August 1, 2002, and December 8, 2009, and are more than 50 feet from the water resource. Developed areas not providing vegetative cover that were developed lawfully between August 1, 2002, and December 8, 2009, and are 50 feet or less from the water resource, shall remain classified as HCA, but the HCA category shall be changed if necessary to remain consistent with Tables 1 and 2.

RESPONSE: As demonstrated by the included HCA Map Verification report and its supporting exhibits and addenda, the site was lawfully developed under an approved grading permit issued in 2002. The work under that permit was completed prior to December 8, 2009, and results in proposed Lots 1, 2 and 3 (which are over 50 feet from the water resource) not providing vegetative cover. As verified, the HCA will remain in an approximately 100 foot buffer from the river. The HCA is located exclusively within Tract A, which is the undevelopable river buffer conservation tract that will be dedicated to the City.

E. For applications filed pursuant to Subsection 17.25.090(A)(4), the HCA boundary shall be established as follows:

1. Locate the water resource that was inventoried by Metro and is the basis for the HCA designation, including: Bankfull stage of streams, rivers, and bodies of open water on or within 200 feet of the subject property; flood areas on or within 100 feet of the subject property; and wetlands on or within 150 feet of the subject property based on the 1994 Clackamas County Wetland Inventory maps adopted by reference in the Comprehensive Plan and the Metro 2002 Wetland Inventory Map (available from the Metro Data Resource Center, 600 N.E. Grand Ave., Portland, OR 97232; 503-797-1742). Identified wetlands shall be further delineated consistent with methods

currently accepted by the Oregon Division of State Lands and the U.S. Army Corps of Engineers.

2. Identify the vegetative cover status of all areas on the subject property that are within 200 feet of the bankfull stage of streams, rivers, and bodies of open water; are wetlands or are within 150 feet of wetlands; and are flood areas or are within 100 feet of flood areas.
   a. Vegetative cover status shall be as identified on the Metro Vegetative Cover Map (available from the Metro Data Resource Center, 600 N.E. Grand Ave., Portland, OR 97232; 503-797-1742); or
   b. Vegetative cover status may be adjusted if the property was developed lawfully between August 1, 2002, and December 8, 2009, or an error was made at the time the vegetative cover status was determined by Metro. To assert the latter type of error, applicants shall submit an analysis of the vegetative cover on their property using summer 2002 aerial photographs and the definitions of the different vegetative cover types provided in Section 17.25.030.
3. Determine whether the degree that the land slopes upward from all streams, rivers, and bodies of open water on or within 200 feet of the subject property is greater than or less than 25 percent. A minimum of three slope measurements along the water resource shall be made on the subject property. The measurements shall be made at no more than 100-foot increments, which means that more than three measurements may be required, depending on the length of the water resource on the subject property. Slope shall be measured in 25-foot increments away from the water resource until a point 200 feet from the starting point of measurement is reached. Where the protected water resource is confined by a ravine or gully, the top of ravine is the break in the greater-than-25-percent slope; and
4. Using Table 1 and the data identified pursuant to Subsections 17.25.090(E)(1) through (3), identify all Class I and II riparian areas on the subject property. The riparian class may vary within a single property.

RESPONSE: The requested HCA Map Verification does not request modification pursuant to subsection 17.25.090(A)(4); therefore, this criterion does not apply

5. Use the Metro Habitat Urban Development Value Map (available from the Metro Data Resource Center, 600 N.E. Grand Ave., Portland, OR 97232; 503-797-1742) to identify the urban development value of the subject property.
   a. An upward adjustment of the subject property's urban development value designation shall be made if the Metro 2040 Design Type designation for the subject property has changed from a category designated as a lower urban development value category to one designated as a higher urban development value category. 2040 Design Type designations are identified on the Metro 2040 Applied Concept Map (available from the Metro Data Resource Center, 600 N.E. Grand Ave., Portland, OR 97232; 503-797-1742). The urban development value categories of the 2040 Design Types are identified in the footnotes to Table 2.
   b. If the subject property is owned by a regionally significant educational or medical facility, as designated by Title 13 of the Metro Urban Growth Management Functional Plan, it is designated as of high urban development value.
   c. If the subject property is located outside the Portland Metropolitan Urban Growth Boundary and therefore does not have a Metro 2040 Design Type designation, it is designated as of high urban development value.

6. Use Table 2 to cross-reference habitat class with urban development value in order to categorize identified HCA as High, Moderate, or Low HCA.

Table 2
Method for Identifying Habitat Conservation Areas (HCA)

Fish & wildlife habitat classification	High urban development value[1]	Medium urban development value[2]	Low urban development value[3]	Publicly owned parks and open spaces
Class I Riparian	Moderate HCA	High HCA	High HCA	High HCA[4]
Class II Riparian	Low HCA	Low HCA	Moderate HCA	Moderate HCA[4]
Class A Upland Wildlife	No HCA	No HCA	No HCA	High HCA [4]
Class B Upland Wildlife	No HCA	No HCA	No HCA	High HCA [4]

NOTE: The default urban development value of property is as depicted on the Metro Habitat Urban Development Value Map. The Metro 2040 Design Type designations provided in the following footnotes are only for use when making an adjustment pursuant to Subsection 706.09(E)(5)(a).

[1] Primary 2040 design type: Central City, Regional Centers, Town Centers, and Regionally Significant Industrial Areas

[2] Secondary 2040 design type: Main Streets, Station Communities, Other Industrial Areas, and Employment Centers

[3] Tertiary 2040 design type: Inner and Outer Neighborhoods and Corridors

[4] HCAs in publicly owned parks and open spaces designated as natural areas shall be considered High HCA+. HCAs in other publicly owned parks and open spaces shall be designated as shown in Table 2.

RESPONSE: As detailed in the HCA Ma Verification report, the HCA located within Tract A is High HCA value.

17.25.100 Habitat conservation area development permits.

A Habitat Conservation Area (HCA) Development Permit shall be approved if the applicant provides evidence substantiating compliance with either Subsection 17.25.100(A) or (B). However, if the proposed development is in a Water Quality Resource Area District regulated pursuant to Chapter 17.27, it shall comply with either Subsection 17.25.100(B) or 17.25.100, except that if the subject parcel contains an HCA and a WQRA and is the subject of a land use application for a partition or subdivision, the partition or subdivision shall comply with the requirements of Sections 17.25.100 and 17.25.110, and if the provisions conflict, the most restrictive standard shall apply.

A. Development in an HCA shall be permitted subject to the following criteria:
   1. Except as provided in Subsections 17.25.100(A)(2) through (5), a maximum disturbance area (MDA) shall apply to the subject property.

   2. The following disturbance area limitations shall apply to certain utility facilities. Utility facilities other than those addressed in Subsections 17.25.100(A)(2)(a) through (c) shall be subject to Subsection 17.25.100(A)(1).
      a. The disturbance area for private connections of utility lines, pipes, or cables to other utility facilities shall be no greater than 10 feet wide.
      b. The disturbance area for the upgrade of existing utility lines, pipes, or cables shall be no greater than 15 feet wide.
      c. The disturbance area for new underground utility lines, pipes, or cables shall be no greater than 25 feet wide and shall disturb no more than 200 linear feet of the Water Quality Resource Area District regulated pursuant to Chapter 17.27,

provided that this disturbance area, with the exception of necessary access points to the utility facility, shall be restored by the planting of native vegetation.

RESPONSE: At completion of the concurrent HCA Map Verification the HCA area will be limited to approximately 100 feet in depth from the river, and located exclusively within the undevelopable Tract A. The development associated with the concurrent Design Review is limited to Lots 1, 2 and 3. No development will encroach into Tract A or the 100 foot wide HCA; thus, there is no development proposed within the HCA. These criteria (17.25.100((A)(1) and (2)) therefore do not apply.

3. A partition of a parcel that contains an HCA shall comply with one of the following options:
   a. There shall be no more than a 30 percentage point difference in the percentage of each parcel's area that is in an HCA. For example, a partition that produces two parcels, one that is 55 percent HCA and the other that is 35 percent HCA, is permissible; whereas a partition that produces two parcels, one that is 75 percent HCA and the other that is 30 percent HCA, is not permissible. In this case, development in the HCA shall be subject to further review under Chapter 17.25;
   b. The partition shall comply with Subsection 17.25.100(A)(4); or
   c. The applicant shall demonstrate, through an analysis of different possible partition plans based on the characteristics and zoning of the subject property, that it is not practicable to comply with Subsection 17.25.100(A)(3)(a) or (b) and that the applicant's alternate plan will result in the smallest practicable percentage point difference in the percentage of each parcel's area that is in an HCA.

RESPONSE: Partition Plat 2008-063 created three (3) parcels on the subject property: Parcel 1 (tax lot 600), Parcel 2 (tax lot 601) and Parcel 3 (tax lot 602). These consolidated applications include a partition of Parcel 3, which creates Lot 3 and Tract A.1

Following the HCA Map Verification, the HCA will be located on only Parcel 3. Following the partition of Parcel 3, 100% of the HCA (all of which is High value) will be located within Tract A. The other unit of land created by the partition of Parcel 3 (Lot 3) will not include any HCA. Because over 90% of the property's High HCA will be platted as a tract, the partition complies with subsection 17.25.100(A)(4). This criterion is therefore met.

4. A subdivision of property that contains an HCA shall require that a minimum of 90 percent of the subject property's High HCA and a minimum of 80 percent of its Moderate HCA shall be platted as a tract rather than as part of any lot. Any HCA that remains outside such a tract may be developed, subject to compliance with the mitigation standards of Subsection 17.25.100(A) or (B). Unless any HCA that remains outside an HCA tract is protected from development by a restrictive covenant or a conservation easement, it shall be assumed that such areas eventually will be developed, and mitigation shall be required. Mitigation shall be completed, or a performance bond in an amount sufficient to cover the cost of mitigation shall be posted with the County, prior to approval of the final plat.

A concurrent property line adjustment reconfigures the interior lot lines between Parcels 1, 2 and 3. Following all approvals, the site will include Lots 1, 2 and 3, and Tract A. Property line adjustments are not subject to these HCA standards.

a. If over 50% of the HCA on the subject property is High HCA, the entire calculation is for High (i.e., 90% of the HCA shall be placed within a separate tract).
b. If over 50% of the HCA on a property is Moderate HCA, the entire calculation is for Moderate (i.e., 80% of the HCA shall be placed within a separate tract).
c. An HCA tract shall be protected from development by restrictive covenant, conservation easement, or public dedication. However, the tract may be subject to an easement conveying storm and surface water management rights to the surface water management authority. The tract shall be designated as one of the following prior to final plat approval:
   i. A private natural area owned by a homeowners association or a private non-profit with the mission of land conservation; or
   ii. A public natural area where the tract has been dedicated to a public entity.

RESPONSE: Following the HCA Map Verification and partition, 100% of the HCA (all of which is High value) will be located on Tract A. Tract A is river buffer tract that will be dedicated to the City and not developed. Because over 90% of the property's High HCA will be platted as a tract, the partition complies with subsection 17.25.100(A)(4).

The developable lots will not include any HCA, so no mitigation is required. This criterion is met.

5. The MDA for publicly owned parks and open spaces designated as natural areas shall be five percent of the HCA on the subject property. Subsection 17.25.100(A)(5) imposes no limit on disturbance area outside an HCA for such natural areas.

RESPONSE: The project does not include publicly owned parks or open space within the development area. This criterion does not apply

6. If development in an HCA is approved pursuant to Subsection 17.25.100(A), compliance with the following mitigation standards shall be required, except that the mitigation standards for development in a wetland (as distinct from an HCA that is adjacent to a wetland) shall be only those required by federal and state law.

RESPONSE: At completion of the concurrent HCA Map Verification the HCA area will be limited to approximately 100 feet in depth from the river. The project does not propose any construction within the HCA area. This criterion does not apply.

7. The mitigation area required by Subsection 17.25.100(A)(6) shall be located as follows:
   a. All vegetation shall be planted on the subject property, either within the HCA or in an area contiguous to the HCA, provided, however, that if the vegetation is planted in an area contiguous to the HCA, such area shall be protected from development by a restrictive covenant, conservation easement, or public dedication.
   b. Off-site mitigation within the same subwatershed (6th Field Hydrologic Unit Code) as the HCA within which development is proposed, may be approved for part or all of the required mitigation, if the applicant provides evidence substantiating that:
      i. It is not practicable to complete the mitigation on-site; and

ii. The applicant possesses legal authority to conduct and maintain the mitigation, such as having a sufficient ownership interest in the mitigation site, and, if the mitigation is not within an HCA, that the mitigation site will be protected from development after the monitoring period expires by a restrictive covenant, conservation easement, or public dedication.

RESPONSE: Mitigation is not required as there is no proposed development within the HCA area per subsection (A)(6) above.

Federal Emergency Management Agency

Washington, D.C. 20472

October 21, 2008

THE HONORABLE WADE BYERS
CITY OF GLADSTONE
CITY HALL
525 PORTLAND AVE
GLADSTONE, OR 97027

CASE NO.: 08-10-0882A
COMMUNITY: CITY OF GLADSTONE, CLACKAMAS COUNTY, OREGON
COMMUNITY NO.: 410017

DEAR MR. BYERS:

This is in reference to a request that the Federal Emergency Management Agency (FEMA) determine if the property described in the enclosed document is located within an identified Special Flood Hazard Area, the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), on the effective National Flood Insurance Program (NFIP) map. Using the information submitted and the effective NFIP map, our determination is shown on the attached Letter of Map Revision based on Fill (LOMR-F) Determination Document. This determination document provides additional information regarding the effective NFIP map, the legal description of the property and our determination.

Additional documents are enclosed which provide information regarding the subject property and LOMR-Fs. Please see the List of Enclosures below to determine which documents are enclosed. Other attachments specific to this request may be included as referenced in the Determination/Comment document. If you have any questions about this letter or any of the enclosures, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, 3601 Eisenhower Avenue, Suite 130, Alexandria, VA 22304-6439.

Sincerely,

William R Blanton Jr

William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

LIST OF ENCLOSURES:

LOMR-F DETERMINATION DOCUMENT (REMOVAL)

cc: State/Commonwealth NFIP Coordinator
Community Map Repository
Region
Mr. Don Devlaeminck
Hon. Wade Byers

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

LEGAL PROPERTY DESCRIPTION (CONTINUED)

COMMENCING at the northeast corner of tax lot 600; thence S05°09'53"W, 324.47 feet; thence S06°28'49"W, 7.15 feet; thence S01°34'40"W, 13.31 feet; thence S04°34'46"E, 18.32 feet; thence S67°01'35"W, 32.58 feet; thence S02°50'48"E, 5.87 feet; thence S22°23'52"E, 7.79 feet; thence S79°11'26"E, 15.83 feet; thence N59°59'03"E, 13.36 feet; thence N76°48'43"E, 36.44 feet; thence N69°32'19"E, 18.60 feet; thence S76°59'03"E, 29.21 feet; thence N60°44'42"W, 53.56 feet; thence N61°49'19"W, 51.50 feet; thence N63°25'53"E, 47.66 feet; thence N64°55'14"E, 47.70 feet; thence N64°14'12"E, 49.53 feet; thence N66°43'31"E, 15.00 feet; thence N37°41'57"E, 17.08 feet; thence N16°50'47"E, 12.77 feet; thence N32°32'04"E, 28.95 feet; thence N54°40'36"E, 17.41 feet; thence N21°53'52"E, 112.78 feet; thence N49°17'46"W, 10.05 feet; thence N07°42'59"E, 30.22 feet; thence N16°31'14"E, 27.92 feet; thence N00°33'04"W, 24.21 feet; thence N134°35'16"E, 48.13 feet; thence S69°48'35"E, 13.01 feet; thence S61°05'32"E, 11.09 feet; thence S84°56'55"E, 2.46 feet; thence N23°35'04"W, 27.42 feet; thence N81°52'06"W, 184.64 feet; thence S66°24'56"W, 195.56 feet; thence S70°25'12"W, 51.25 feet; thence S79°22'57"W, 64.78 feet to the POINT OF THE BEGINNING

PORTIONS OF THE PROPERTY REMAIN IN THE FLOODWAY (This Additional Consideration applies to the preceding 1 Property.)

A portion of this property is located within the Special Flood Hazard Area and the National Flood Insurance Program (NFIP) regulatory floodway for the flooding source indicated on the Determination/Comment Document while the subject of this determination is not. The NFIP regulatory floodway is the area that must remain unobstructed in order to prevent unacceptable increases in base flood elevations. Therefore, no construction may take place in an NFIP regulatory floodway that may cause an increase in the base flood elevation, and any future construction or substantial improvement on the property remains subject to Federal, State/Commonwealth, and local regulations for floodplain management. The NFIP regulatory floodway is provided to the community as a tool to regulate floodplain development. Modifications to the NFIP regulatory floodway must be accepted by both the Federal Emergency Management Agency (FEMA) and the community involved. Appropriate community actions are defined in Paragraph 60.3(d) of the NFIP regulations. Any proposed revision to the NFIP regulatory floodway must be submitted to FEMA by community officials. The community should contact either the Regional Director (for those communities in Regions I-IV, and VI-X), or the Regional Engineer (for those communities in Region V) for guidance on the data which must be submitted for a revision to the NFIP regulatory floodway. Contact information for each regional office can be obtained by calling the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or from our web site at http://www.fema.gov/about/regoff.htm.

SUPERSEDES OUR PREVIOUS DETERMINATION (This Additional Consideration applies to all properties in the LOMR-F DETERMINATION DOCUMENT (REMOVAL))

This Determination Document supersedes our previous determination dated 9/4/2008, for the subject property.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, 3601 Eisenhower Avenue, Suite 130, Alexandria, VA 22304-6439.

William R Blanton Jr

William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	CITY OF GLADSTONE, CLACKAMAS COUNTY, OREGON	A portion of Sections 19, 20 and 30, Township 2 South, Range 2 East, Willamette Meridian, as described in the Statutory Warranty Deed recorded as Document No. 2008-009798, in the Office of the County Clerk, Clackamas County, Oregon (TL: 600) The portion of property is more particularly described by the following metes and bounds:
	COMMUNITY NO.: 410017	
AFFECTED MAP PANEL	NUMBER: 41005C0038D; 41005C0276D	
	DATE: 6/17/2008; 6/17/2008	
FLOODING SOURCE: CLACKAMAS RIVER		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 45.376, -122.599 SOURCE OF LAT & LONG: PRECISION MAPPING STREETS 7.0 DATUM: NAD 83

DETERMINATION

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
-	--	--	--	Property	X (shaded)	48.0 feet	--	48.0 feet

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)

LEGAL PROPERTY DESCRIPTION
PORTIONS REMAIN IN THE FLOODWAY
SUPERSEDES PREVIOUS DETERMINATION

This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Revision based on Fill for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document revises the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.

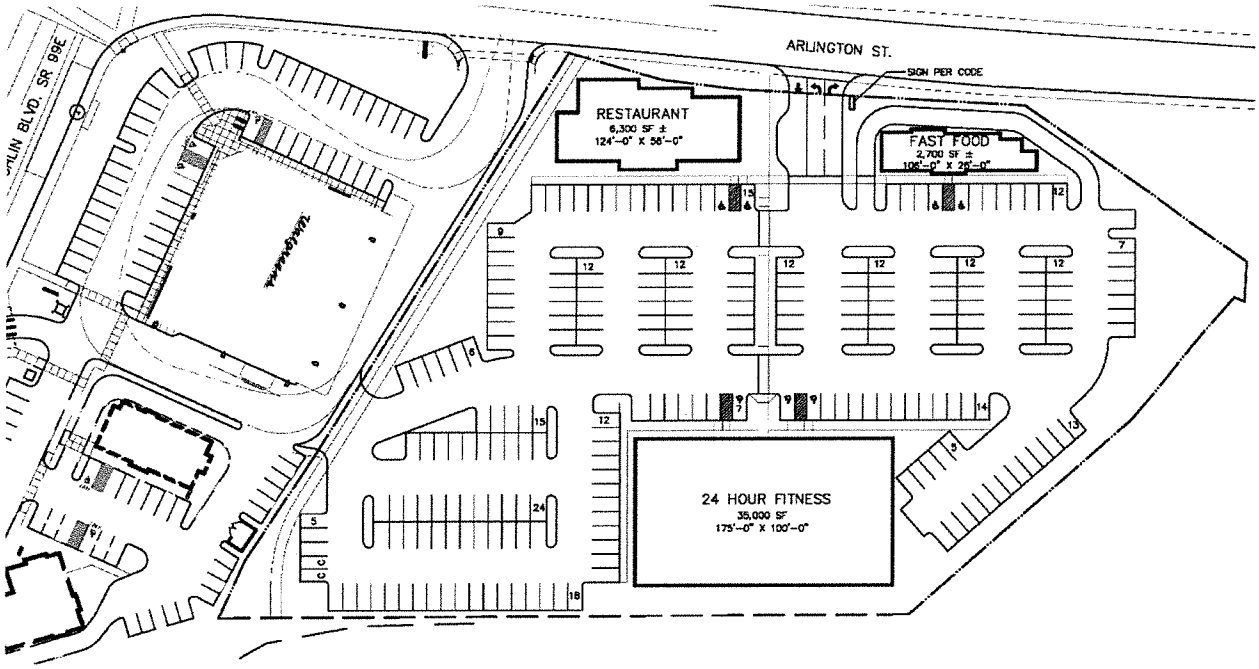
This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, 3601 Eisenhower Avenue, Suite 130, Alexandria, VA 22304-6439.

William R Blanton Jr

William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

Water Resource Report
Arlington Retail Site

Lots 22E20 - 00600, 00601 and 00602
In Gladstone, Oregon



Evaluated by: John McConnaughey, PWS

ETC Job EVA15011

November 2015

Prepared for:
Baysinger Partners Architecture
1006 SE Grand Ave., Suite 300
Portland, OR 97214

Environmental Technology Consultants
PO Box 821185
Vancouver, WA 98662
A Division of Sisul Enterprises, Inc.
(360) 696-4403 Fax: (503) 657-5779
WA Landscape Contractors License #: ENVIRTCO23RB
Web: www.etcEnvironmental.net
Email: etc@etcEnvironmental.net

"Creating Tomorrow's Environment - Today"

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Photo 1. (Cover Page). Development plan for Baysinger Partners Arlington Retail Site.

INTRODUCTION

This report provides information for a Water Resources Report, (WRR), per the City of Gladstone Municipal Code, (GMC). GMC Section 17.27.042 requires the applicant to maintain or reduce stream temperatures; maintain natural stream corridors; reduce potential sediment, nutrient and pollutant loading into water; provide filtration, infiltration and natural water purification; and stabilize slopes to prevent landslides contributing to sedimentation of water features.

QUALIFICATIONS OF JOHN MCCONNAUGHEY

I earned a Bachelor of Science degree from the University of Oregon in 1978 and in 1984 I earned a Masters of Fisheries Science degree from the University of Alaska at Juneau, (since renamed the University of Alaska, Southeast). The Juneau curriculum specializes in the study of Pacific salmon. I held positions with agencies tasked with salmon research and management beginning with summer jobs in 1979 in Rogue River, the Oregon Dept of Fish and Wildlife, and then with the Alaska Department of Fish and Game in Ketchikan Alaska, in 1980. I worked on salmon projects with ADF&G in Anchorage and Juneau for 5 years before moving to American

Samoa to serve as a fisheries projects leader for the Department of Marine and Wildlife Resources. Upon returning stateside, I worked for the Yakama/Klickitat Fisheries Project out of Yakima Washington for 5 years leading four research projects studying aspects of salmon supplementation projects in the Yakima River.

I have been employed with Environmental Technology Consultants for the past 6 years. In 2010 I earned certification as a Professional Wetland Scientists, (PWS) from the Society of Wetlands Scientists, (SWS).

No part of my compensation is dependent on the outcome of my investigations or conclusions I may draw from the observed data.

QUALIFICATIONS OF ANNAKATE MARTIN

I earned a Bachelor of Science degree in Natural Resources from Washington State University in 2002. In 2002 I worked for the University of Idaho on MAP tracking steelhead and salmon on the Snake River out of Clarkston, Washington.2002-2003 I worked for Idaho Fish and Game as a field technician for identifying fish in remote streams in Idaho. In 2004 I worked for Environmental Technology Consultants conducting wetland delineations and Phase I ESA reports. From 2007-2014 I worked for 3 Kings Environmental conducting Phase I ESA reports, asbestos and lead surveys. In 2011 I started my own company primarily providing erosion control services and Phase I ESA reports.

I have been re-employed with Environmental Technology Consultants in 2015 for wetland delineation consulting.

Methods

We are familiar with this site, as it is walking distance from our office, and we have been by it numerous times over the past five years. John McConnaughey also performed a habitat survey, and an estimation of impact to endangered species for a neighboring property now developed as a Black Rock Coffee stand. And a couple years ago I collected GPS data in connection with mapping storm water facilities for the city of Gladstone. There is a storm water outfall on the Clackamas River near the property, which I accessed by crossing the property.

An HCA data set in CAD format for Clackamas County was provided to us by the County Planning Department, and this data set shows property lines, HCA areas, floodways, wetlands, and WQRA areas.

Aerial photos were acquired from Google Earth and these provided sufficient historical aerials to satisfy the requirements of GMC Chapter 17.25 for this report.

Site visits and a wetland determination were conducted on two site visits during the week of November 16, 2015.

Subject Properties.

This report includes three contagious tax lots last platted in 2008. Seven Hills proposes to develop these lots as a commercial location containing three buildings and 232 parking spaces. The applicants intend to replat the property into 3 lots and 1 undeveloped tract through modification of interior lot lines. There will be one lot for each of the buildings, and the undeveloped tract as a dedicated conservation easement along the river.

The property is currently comprised of three tax lots numbered 600, 601 and 602. These lots are reflected in all online sources including www.PortlandMaps.com, Clackamas County CMap online database and other online sources, including the property as mapped in the HCA data base. These lots were replatted in 2008 and given the lot numbers 600, 601 and 602 at that time. The grading permit from 2002 calls the lots out as 7200, 7300 and 600. Some documents refer to these properties as a single lot #600 when referring to the whole development. At the time of the grading permit the total site area was 6.0 acres, and is thus listed on the Grading Permit as six acres; however, during the 2008 replat some land area was dedicated to the abutting eastern parcel thus reducing the overall site area for the three properties to approximately 5.10 acres. As part of the currently proposed replat the site area will be further reduced to approximately 4.03 acres after the creation and dedication of the approximately 1.09 acre riverfront conservation parcel.

The September 12, 2002 grading permit is an important document in support of this application as it demonstrates the property was legally filled and graded, and thus meeting GMC section 17.25.090.A.3.

This report will refer to the property as Lot 600, which will be taken to include the following lots listed on the Clackamas County Assessor's database, cmap.clackamas.us, and the HCA data base:

Table 1. The subject property as shown in the HCA data base as of 2013, and the current data base at cmap.clackamas.us

Property ID	State ID	Acres
00529869	22E20 00600	0.762
05021082	22E20 00601	0.29
05021083	22E20 00602	4.01
TOTAL		5.062

Current and Past Uses:

Aerial photos going back to 1994 do not show any structures on the property, however it appears to have been kept clear through semi-annual clearing efforts, and the 2002 aerial shows several dump truck piles of material. This work continued in 2003 and appears to have reached a maximum in 2004 when the upper parts of the site were entirely graded. From 2004 through about 2012 it looks like the vegetation was controlled, but little other work was done, although

we know from permit applications effective December 1, 2010 that a firm by the name of Parker Landing LLC was attempting to develop the site. In 2012 someone started dumping large volumes of wood chips on a bench area near the river.

Water Quality Resource Area Per GMC 17.27.042

The City of Gladstone Water Quality Resource Area application form lists the following submittal requirements, listed below in AgencyFB Font, with our response in Times New Roman font:

(1) Applications for uses subject to review must provide the following information in a water resources report in addition to the information required for the underlying zoning district. An application shall not be complete until all of the following information is provided. The water resources report shall be stamped by a registered professional engineer or surveyor licensed by the State of Oregon.

(a) A topographic map of the site at contour intervals of five feet or less showing a delineation of the water quality resource area;
The location of all existing natural features including, but not limited to, all trees of a caliper greater than six inches diameter at a height of four feet, natural or historic drainages on the site, springs, seeps, outcroppings of rocks and boulders within the water quality resource area;

A topographic survey performed June 2, 2015 was used in answer to WQR questions involving slopes, please see the figures in Appendix C.

(b) The location of all existing natural features including, but not limited to, all trees of a caliper greater than six inches diameter at a height of four feet, natural or historic drainages on the site, springs, seeps, outcroppings of rocks and boulders within the water quality resource area;

Three aerial photos from Google Earth are provided. There are limited trees on the southwest, natural or historic drainages are non-existent except for a dried up filled in gulch that appears to drain to the Gladstone storm water system, no springs or outcroppings of rocks or boulders in the water quality resource area. Google Earth aerial photos were provided in Appendix C to document the natural features.

The aerials photos provided are:

- April 2002
- September 11, 2002
- July 20, 2004

These aerials show extensive grading and filling activity beginning in 2002 which are consistent with the grading permit displayed as Appendix "A".

(c) Location of wetlands that qualify as primary protected water features. Where such wetlands are identified, a delineation shall be made by a qualified wetlands specialist pursuant to the Division of State Lands' recommended wetlands delineation process;

A wetland delineation was conducted and no wetland were found. The lots are primarily fill and weedy ground cover. Wetland forms are in Appendix B. The topographic survey mapped the ordinary high water, (OHW), of the Clackamas River. The surveyors left pink flagging at what they determined to be OHW. We concurred with their estimate, and used their OHW as the basis for mapping areas within the jurisdiction of the Gladstone Water Quality Resources Area District, (see Figure 1).

The GMC uses bankfull flow, not OHW as the starting point of the vegetated corridor. The GMC effectively defines bankfull as 1ft in elevation above OHW. On this site it makes little difference as OHW occurs on a very steeply sloped area ranging from 60% to near vertical, and 1FT difference in elevation will only translate to 1 or 2 FT horizontal distance.

(d) An inventory and location of existing debris, nuisance vegetation, and any noxious or hazardous materials;

The existing development area consists of fill material and grading permitted by the permit shown in Appendix "A". GMC Section 17.25.030.E includes in the definition of a development "fill or grading in excess of 10 yards". The permit allows 20,000 yards of fill, and it is evident that the amount of fill and grading on the property is in great excess of 10 yards. Along the majority of the vegetated corridor was a dumping area for wood chips, the amount of chips is unknown but significant, and several feet deep in areas.

In ETC's opinion the wood chips are not a hazardous material, although might be considered as "debris". If we were to recommend a revegetation plan for this area, we would recommend it be covered by 4" of wood chips as part of the site preparation. At this point we recommend just leaving them in place except where their removal is required for bike paths or other structures.

(e) An assessment of the existing condition of the water quality resource area in accordance with Table 2;

The assessment of the existing condition of the water quality resource area in accordance with Table 2 is a "Degraded Existing Corridor". An examination of the site and the aerial photos provided show convincing evidence that the activities allowed by the permits did in fact remove vegetation on the site, and also did fill more than 10 yards of material on the site to classify it as a development. In the vegetated corridor there was yards of bark chips that had been dumped and sparsely vegetated ground of primarily noxious weeds.

(f) An inventory of vegetation, including percentage ground and canopy coverage;

An inventory of vegetation, including percentage ground and canopy coverage was documented for the site. In the area that will be developed is primarily grasses (Red Fescue and Poa sp.) and noxious weeds (Himalayan Blackberry, moss, Tansy, ect..) that cover the ground at 100% and no trees; in the vegetated corridor along the Clackamas River there was degraded vegetation of Himalayan Blackberry, Lambs Ears, Epilobium, Canadian Thistle, some other vegetation in lower percentages and bare ground, there was approximately 10% Cottonwood, 3% Maple, and 2% Alder trees. A vegetation form is included in Appendix B.

(g) An alternatives analysis in conformance with the requirements of GMC Subsections 17.27.045(I)(a) and (b);

No impacts to the WQRAD are proposed.

(h) A water quality resource area mitigation plan. The plan shall contain the following information:

(A) A description of adverse impacts that will be caused as a result of development;

The proposed development will not impact the vegetated corridor due to a buffer of 100' from the ordinary high water mark (OHWM). As per Table 1 in the GMC subsections 17.27.20 the 100' from OHWM covers the "distance from starting point of measurement to break in 25 percent slope plus 50 feet".

(B) An explanation of how adverse impacts to resource areas will be avoided, minimized, and/or mitigated in accordance with, but not limited to, Table 2;

No direct impacts to the WQRAD are proposed. The table below shows measures taken to minimize indirect impacts:

Disturbance	Uses and Activities that Cause the Disturbance	Proposed Measures to Minimize Impacts
Lights	Parking lots, 24HR Fitness	Lights are directed away from new river track and the river
Noise	Parking area	All noisy activities in athletic club are contained inside. Restaurant uses are located as far from river as feasible
Toxic runoff	Parking lots, landscaping chemicals	Route only treated runoff to a wetland. Establish covenants limiting use of toxic chemicals within 150' of WQRAD. Apply integrated pest management.
Change in water regime	Impervious surfaces	Stormwater runoff will be treated, Infiltrate and detained or treat, detain before discharge to the WQRAD.
Human disturbance	Residential, commercial, industrial	We will landscape extensively along rear of site to minimize human disturbance
Dust	Grading & construction activities	Utilize best management practices to control dust. Contractor will minimize dust producing activities.

The applicant proposes to re-plat the property by redrawing the interior lot lines creating 3 lots and 1 undeveloped tract. Tract "A", the vegetated corridor, is the areas within about 100FT of

the OHWM along the Clackamas River, and will be designated as a conservation area. It contains all remaining riparian areas of the property.

The applicant states that they plan to revegetate Tract "A", but as this effort appears to be a voluntary contribution, no mitigation plan would appear to be required as long as they only install plants that are on Gladstone's Native Plant list.

APPENDIX A

2002 Grading Permit

3 PAGES

2010 1200C Storm Water Discharge Permit

2 pages.

GRADING PERMIT FROM 9/12/2002
PAGES 1 THROUGH 3 OF 10 PAGES COPIED HERE, REMAINING PAGES AVAILABLE ON REQUEST.

Grading Permit Application

Clackamas County

9101 SE Sunnybrook Blvd., Clackamas, OR 97015
Phone: (503) 353-4400, FAX: (503) 353-4741
Internet address: www.co.clackamas.or.us

Land use approval: _____

OFFICE USE ONLY			
Date received:	Permit no.:		
Project/appl. no.:	Expire date:		
Date issued:	By:	Receipt no.:	
Case file no.:	Payment type:		

TYPE OF PERMIT

- ☐ 1 & 2 Family Dwelling or Accessory
- ☐ New Construction
- ☑ Commercial/Industrial
- ☐ Multi-Family
- ☐ Grading
- ☐ Other: _____

JOB SITE INFORMATION

Job Address: 475 W. ARLINGTON ST. GLADSTONE, OR. | Bldg. No.: —
Nearest Cross Street: CLACKAMAS BLVD.
Legal Description: TAX LOT 7200, 7300 & 600 T2S, R2E, SEC 28 CC
Project name: PARKER FILL | City/Co GLADSTONE | Zip
Intended Use of Filled Area: _____
Description and location of work on premises/special conditions: PLACEMENT OF STRUCTURAL FILL

OWNER

Name: THE ESTATE OF JACK W. PARKER
Mailing address: P.O. BOX AF
City: SCAPPOOSE | State: OR | ZIP: 97056
Phone: 503-543-8821 | Fax: 543-7477 | E-mail:
Owner's representative: DON VEDDER
Phone: 503-656-1160 | Fax: 657-0171 | E-mail:

CONTRACTOR

Name: ERICKSON HEAVY CONSTRUCTION
Address: 15720 SOUTH HARLOW AVE.
City: OREGON CITY | State: OR | ZIP: 97045
Phone: 655-3478 | Fax: | E-mail:
CCB no.: 68443 | City/metro lic. no.:

Notice: All contractors and subcontractors are required to be licensed with the Construction Contractors Board of the State of Oregon under provisions of ORS 701 and may be required to be licensed in the jurisdiction where work is being performed, or, the applicant is exempt from licensing, the following reason:

_____

Lot Size: TAX LOT 600 = 6.0 AC. TAX LOT 7300 = 1.64 AC.
Cubic Yards of Material: 21,000 cy
Water Source: CITY OF GLADSTONE
Sewage Disposal System
- ☐ septic
- ☑ sewer

Submit 5 sets of plans & one geotechnical report (if applicable). Plans shall include the following:

1. To-scale plot plan showing existing and proposed development, including features such as proposed and existing buildings, roads, utilities, septic system or septic approval location, drainage ways and rivers.
2. Sufficient cross sections to accurately represent proposed work.

The signer grants County employees access to the property in question for the purpose of completing this review, and follow up inspections, as required.

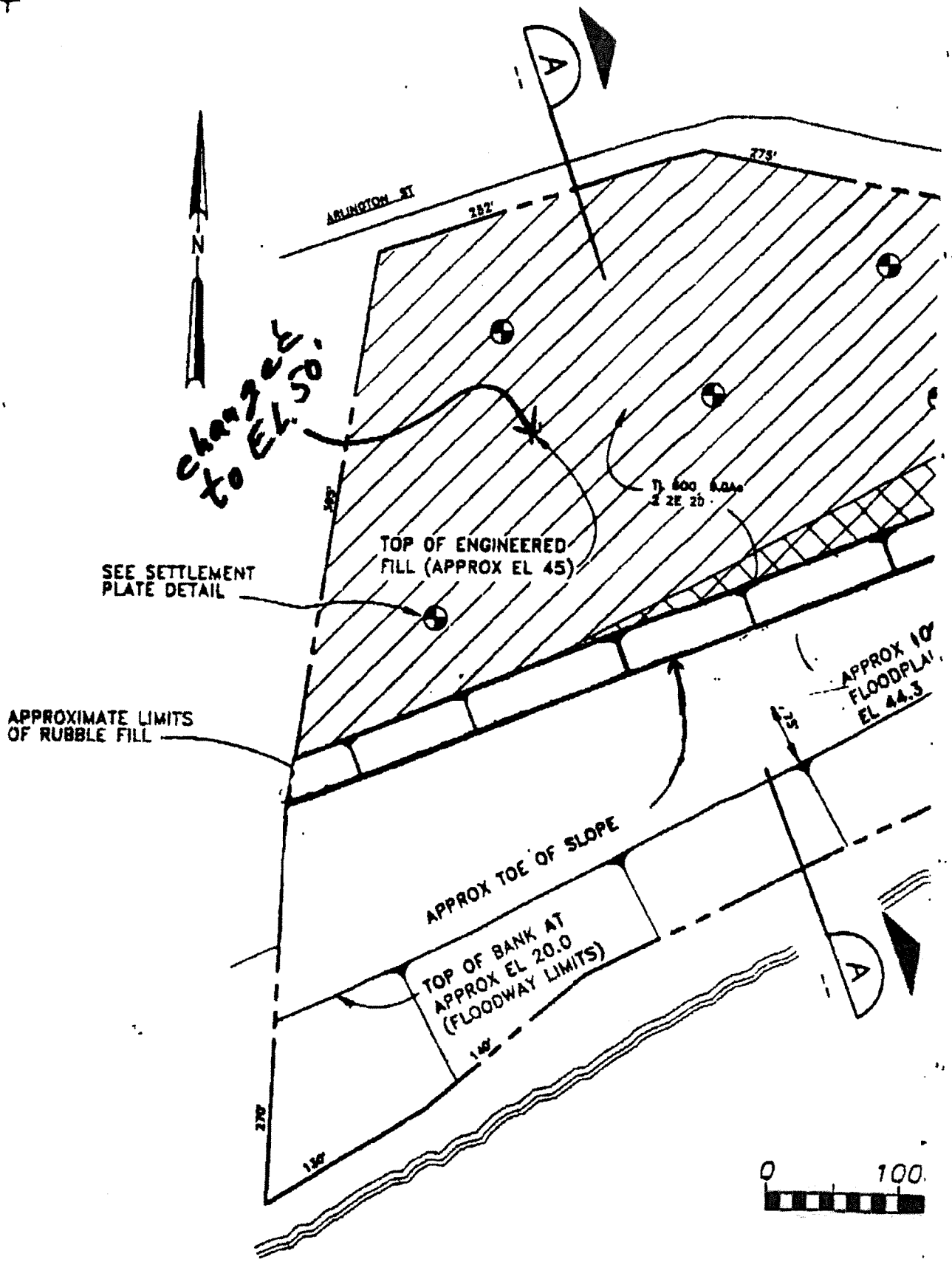
I hereby certify I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not.

Authorized signature: _____ Date: 9/12/02
Print name: Scott T. Parker

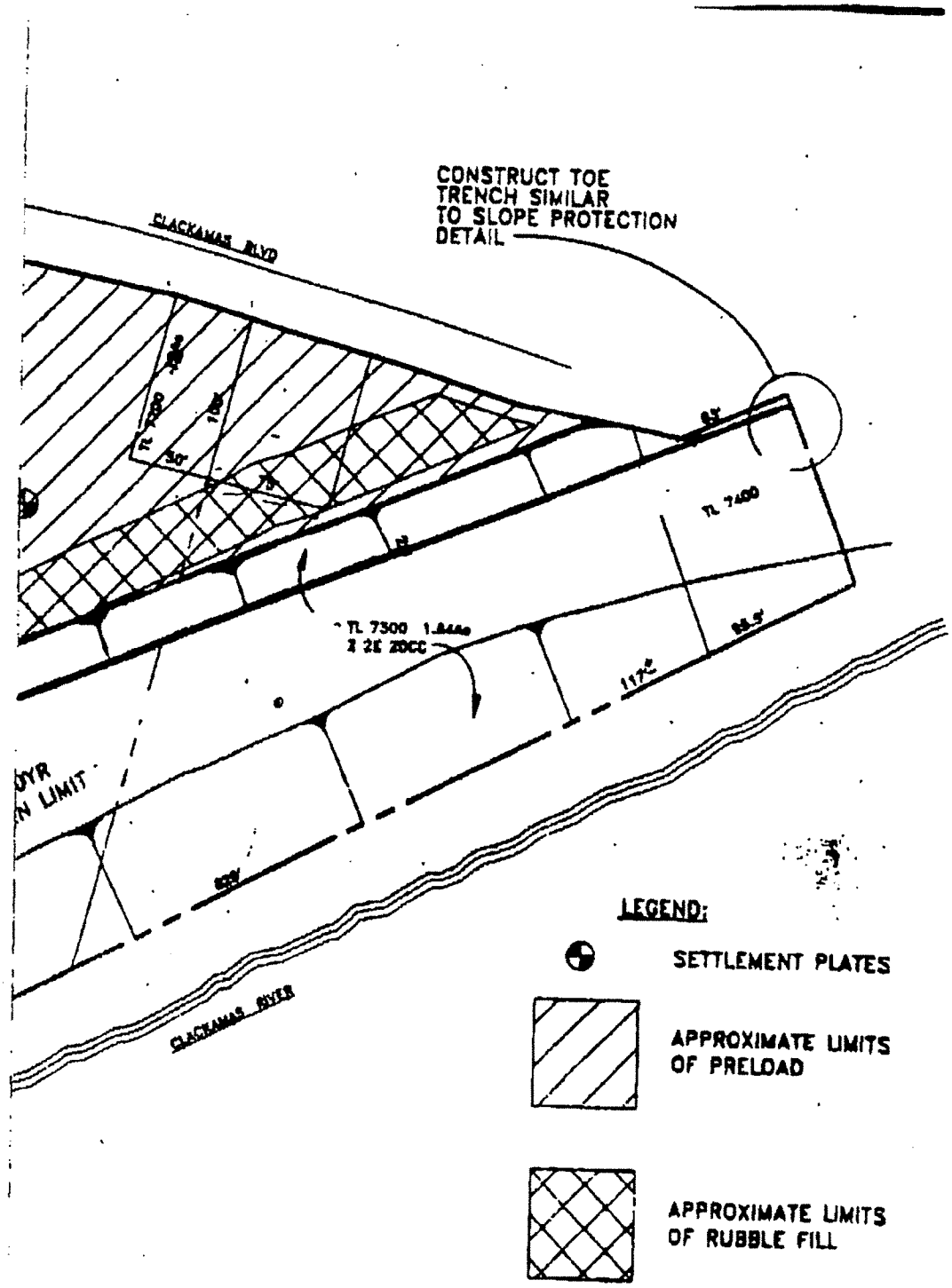
Notice: This permit application expires if a permit is not obtained within 180 days after it has been accepted as complete.

OFFICE USE ONLY	
Minimum Fee	$
Plan Review Fee	$
TOTAL	$

(Rev. 6/01)


A
N
ARLINGTON ST
282'
275'
changed to EL 50'
TOP OF ENGINEERED FILL (APPROX EL 45)
SEE SETTLEMENT PLATE DETAIL
APPROXIMATE LIMITS OF RUBBLE FILL
APPROX 10' FLOODPLAIN EL 44.3
APPROX TOE OF SLOPE
TOP OF BANK AT APPROX EL 20.0 (FLOODWAY LIMITS)
270'
150'
0
100

6



SITE PLAN

200 300 400

SCALE: 1"=100'

6

GENERAL PERMIT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
STORMWATER DISCHARGE PERMIT

Oregon Department of Environmental Quality
811 SW Sixth Avenue, Portland OR 97204
Telephone: (503) 229-5279 or 1-800-452-4011 (toll free in Oregon)

Issued pursuant to ORS 468B.050 and Section 402 of the Federal Clean Water Act

REGISTERED TO: 7/30/12 GEN12C Clackamas/NWR
File Number: 112041 EPA Number: ORR108050

Parker Landing, LLC
PO Box 2200
Oregon City, OR 97045

Site: Parker - Gladstone

SOURCES COVERED BY THIS PERMIT:

- Construction activities including clearing, grading, excavation, materials or equipment staging and stockpiling that will disturb one or more acres and may discharge to surface waters or conveyance systems leading to surface waters of the state.
- Construction activities including clearing, grading, excavation, materials or equipment staging and stockpiling that will disturb less than one acre that are part of a common plan of development or sale if the larger common plan of development or sale will ultimately disturb one acre or more and may discharge to surface waters or conveyance systems leading to surface waters of the state.
- This permit also authorizes discharges from any other construction activity (including construction activity that disturbs less than one acre and is not part of a common plan of development or sale) designated by DEQ, where DEQ makes that designation based on the potential for contribution to an excursion of a water quality standard or for significant contribution of pollutants to waters of the state.

This permit does not authorize the following:

- In-water or riparian work, which is regulated by other programs and agencies including the Federal Clean Water Act Section 404 permit program, the Oregon Department of State Lands, the Oregon Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, the U.S. Army Corp of Engineers, the National Marine Fisheries Service, and the Department of Environmental Quality Section 401 certification program.
- Post-construction stormwater discharges that originate from the site after completion of construction activities and final stabilization.
- Discharges to underground injection control (UIC) systems.

Neil Mullane

Neil Mullane, Administrator
Water Quality Division

Effective: December 1, 2010
Expiration Date: November 30, 2015

PERMITTED ACTIVITIES

Until this permit expires, is modified or revoked, the permit registrant is authorized to construct, install, modify, or operate erosion and sediment control measures and stormwater treatment and control facilities, and to discharge stormwater and certain specified non-stormwater discharges to surface waters of the state or conveyance systems leading to surface waters of the state in conformance with all the requirements, limitations, and conditions set forth in the permit including attached schedules as follows:

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APPENDIX B

Wetland Delineation Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: **Parcel numbers 41005C0038D & 41005C0276D** City/County: **Gladstone** Sampling Date: **11/17/2015**

Applicant/Owner: **Baysinger Partners Architecture PC** State: **OR** Sampling Point: **P1**

Investigator(s): **John McConnaughey PWS# 2009** Section, Township, Range: **T2S R2E S 19, 20 & 30**

Landform (hillslope, terrace, etc.): **gulch** Local relief (concave, convex, none): **concave** Slope (%): **25**

Subregion (LRR): **LRR-A** Lat: **45.376°** Long: **-122.599°** Datum: **NAD 1984**

Soil Map Unit Name: NWI classification: **Not a wetland**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.) **Very wet**

Are Vegetation ☒, Soil ☒, Or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is sampled area in a wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: **Sample point is in the bottom of a small gulch that at one time extended to the Clackamas River. This was probably a minor tributary of the Clackamas, but all but this remaining tiny section has been filled in, and the waters that at one time flowed here are now diverted to the Gladstone stormwater system.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **30' cir**)	Absolute % Cover	Dominant Species?	Indicator Status
1. **Populus trichocarpa**	**10%**	**Y**	**FAC**
2. **Salix lucida**	**10%**	**Y**	**FACW**
3. **Pseudotsuga menziesii**	**8%**	**Y**	**FACU**
4. **Acer macrophyllum & Picea Pungens**	**12%**	**Y**	**FACU**
	40%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **25'**)			
1. **Rubus armeniacus**	**100%**	**Y**	**FACU**
2.	%		
3.	%		
4.	%		
5.	%		
	100%	= Total Cover	
Herb Stratum (Plot Size:)			
1. **Equisetum arvense**	**50%**	**Y**	**FAC**
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
	50%	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1. **Hedera helix**	**0%**		**FACU**
2. **Clematis spp.**	**0%**		**FAC**
	0%	= Total Cover	

% Bare Ground in Herb Stratum **100%**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**3**	(A)
Total Number of Dominant Species Across All Strata:	**6**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**50%**	(A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 6 - Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: **The gulch is filled with blackberries, with several small trees poking through. A section of the side slope has a dense growth of Equisetum, but otherwise with the exception of some small trees, the vegetation is blackberries.**

SOIL **Project Site:** Parcel numbers 41005C0038D & 41005C0276D **Sampling Point:** P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
		%		%				
		%		%				
1 - 12	10YR3/3	100%		%			Silt clay loam	
		%		%				
12 -		%		%			Rocks - shovel refusal	
		%		%				
		%		%				
		%		%				

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: **This used to be a rocky stream bed, but side slope soils have sloughed into the channel after it was cut off from it's drainage basin upslope. Historic aerials show a lot of machinery and grading in the area, probably quite a bit of soils have slumped in. The soil is now built up more than a foot over the old streambed.**

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations: **DATE:** 11/17/15

Surface Water Present?	Yes ☐	No ☒	Depth (inches):			
Water Table Present?	Yes ☐	No ☒	Depth (inches):	>12"		
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	??		

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: **It was pouring rain at the time of the survey. A Gladstone weather station recorded 0.9" of rain for this day, yet I observed**

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: **Parcel numbers 41005C0038D & 41005C0276D** City/County: **Gladstone** Sampling Date: **12/1/2015**

Applicant/Owner: **Baysinger Partners Architecture PC** State: **OR** Sampling Point: **P2**

Investigator(s): **John McConnaughey PWS# 2009** Section, Township, Range: **T2S R2E S 19, 20 & 30**

Landform (hillslope, terrace, etc.): **terrace** Local relief (concave, convex, none): **concave** Slope (%): **2**

Subregion (LRR): **LRR-A** Lat: **45.376°** Long: **-122.599°** Datum: **NAD 1984**

Soil Map Unit Name: NWI classification: **Not a wetland**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.) **dry day**

Are Vegetation ☒, Soil ☒, Or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is sampled area in a wetland?**	**Yes ☐**	**No ☒**
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			

Remarks: **Sample point was located in the middle of the buildable flat lot. This is a vegetation plot only. The area is significantly disturbed from it's natural conditions by the importation of large amounts of fill which have been graded flat over the site.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **100' cir**)	Absolute % Cover	Dominant Species?	Indicator Status
1. **0**	%		
2.	%		
3.	%		
4.	%		
	0%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **100'**)			
1. **Rubus armeniacus**	**5%**	**Y**	**FACU**
2. **Rose (non-native)**	**1%**	**N**	**NA**
3.	%		
4.	%		
5.	%		
	7%	= Total Cover	
Herb Stratum (Plot Size: **100'**)			
1. **Festuca rubra**	**35%**	**Y**	**FAC**
2. **Poa sp.**	**40%**	**Y**	**FAC?**
3. **Plantago major**	**10%**	**N**	**FAC**
4. **Daucus carota**	**5%**	**N**	**FACU**
5. **moss**	**20%**	**N**	**NA**
6. **Senecio jocobaea (?)**	**10%**	**Y**	**FACU**
7. **Rumex crispus**	**2%**	**N**	**FAC**
8. **Cichorium intybus**	**20%**	**Y**	**FACU**
9.	%		
10.	%		
11.	%		
	142%	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1. **Hedera helix**	**0%**		**FACU**
2. **Clematis spp.**	**0%**		**FAC**
	0%	= Total Cover	

% Bare Ground in Herb Stratum **100%**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**5**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**40%**	(A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is $\leq 3.0^1$
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 6 - Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ No ☒

Remarks: **This is essentially a weedy field. The grasses are very short from heavy grazing by geese, and in winter condition, making it difficult to determine their species. Area has been intentionally kept free of shrubs and trees.**

SOIL **Project Site:** Parcel numbers 41005C0038D & 41005C0276D **Sampling Point:** P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☐

Remarks: **Soil not sampled. Known to be fill material.**

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations: **DATE:**

Surface Water Present?	Yes ☐	No ☐	Depth (inches):		
Water Table Present?	Yes ☐	No ☐	Depth (inches):		
Saturation Present? (includes capillary fringe)	Yes ☐	No ☐	Depth (inches):		

Wetland Hydrology Present? **Yes** ☐ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: **Not sampled. No reason to suspect wetland hydrology exists in this fill area.**

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: **Parcel numbers 41005C0038D & 41005C0276D** City/County: **Gladstone** Sampling Date: **12/1/2015**

Applicant/Owner: **Baysinger Partners Architecture PC** State: **OR** Sampling Point: **P2**

Investigator(s): **John McConnaughey PWS# 2009** Section, Township, Range: **T2S R2E S 19, 20 & 30**

Landform (hillslope, terrace, etc.): **hillslope** Local relief (concave, convex, none): **concave** Slope (%): **10**

Subregion (LRR): **LRR-A** Lat: **45.376°** Long: **-122.599°** Datum: **NAD 1984**

Soil Map Unit Name: NWI classification: **Not a wetland**

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.) **dry day**

Are Vegetation ☒, Soil ☒, Or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is sampled area in a wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☐		
Wetland Hydrology Present?	Yes ☐	No ☐		

Remarks: **Sample point was located on bench above river that is planned to become "Track A", and placed into a conservation covenant. .This is vegetation plot only. Past grading and clearing activities have removed most of the vegetation except for a little around the edges. Someone has dumped a large amount of wood chips in the area, which is now the main ground cover.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot Size: **Entire Track "A"**)	Absolute % Cover	Dominant Species?	Indicator Status
1. **Populus balsamifera ssp. Trichocarpa**	**10%**	**Y**	**FAC**
2. **Acer macrophyllum**	**3%**	**Y**	**FACU**
3. **Alnus rubra**	**2%**	**N**	**FAC**
4.	%		
	15%	= Total Cover	
Sapling/Shrub Stratum (Plot Size: **Entire track "A"**)			
1. **Rubus armeniacus**	**5%**	**Y**	**FACU**
2.	%		
3.	%		
4.	%		
5.	%		
	5%	= Total Cover	
Herb Stratum (Plot Size: **Entire Track "A"**)			
1. **Stachys byzantina**	**5%**	**Y**	**NA**
2. **Cirsium arvense**	**10%**	**Y**	**NA**
3. **Epilobium sp.**	**5%**	**Y**	**NA**
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
	20%	= Total Cover	
Woody Vine Stratum (Plot Size:)			
1. **Hedera helix**	**0%**		**FACU**
2. **Clematis spp.**	**2%**	**Y**	**FAC**
	2	= Total Cover	

% Bare Ground in Herb Stratum **100%**

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	**2**	(A)
Total Number of Dominant Species Across All Strata:	**7**	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	**28%**	(A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x1 =
FACW species	x2 =
FAC species	x3 =
FACU species	x4 =
UPL species	x5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 6 - Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: **There are a number of herb species in a winter condition that we are not able to identify. Possibly a significant amount of Poison Hemlock.**

SOIL **Project Site: Parcel numbers 41005C0038D & 41005C0276D** **Sampling Point: P2**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (Moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: **Most of the soil is a layer of woodchips up to 3' deep. Underneith is believed to be a gravel and cobble alluvial soil.**

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations: **DATE:**

Surface Water Present?	Yes	☐	No	☐	Depth (inches):				**Wetland Hydrology Present?** **Yes** ☐ **No** ☐
Water Table Present?	Yes	☐	No	☐	Depth (inches):				
Saturation Present? (includes capillary fringe)	Yes	☐	No	☐	Depth (inches):				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C

Figure 1 – April 2002 Aerial
Figure 2 - July 2002 Aerial
Figure 3 – July 20, 2004 Aerial
Figure 4 – June 22, 2009
Figure 5 – April 7, 2015 Aerial
Figure 6 – Topo Map.
Figure 7- Topo Map with Native Trees and Nuisance Vegetation

APPENDIX C

Figure 1 – April 2002 Aerial
Figure 2 - July 2002 Aerial
Figure 3 – July 20, 2004 Aerial
Figure 4 – June 22, 2009
Figure 5 – April 7, 2015 Aerial
Figure 6 – Topo Map.
Figure 7- Topo Map with Native Trees and Nuisance Vegetation

FIGURE 1	
AERIAL PHOTOGRAPH, APRIL 2002	
Baysinger Partners Architecture PC 1006 SE Grand Ave, Suite 300 Portland, OR 97214	
SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

FIGURE 2	
AERIAL PHOTOGRAPH, JULY 2002	
Baysinger Partners Architecture PC 1006 SE Grand Ave, Suite 300 Portland, OR 97214	
SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

FIGURE 3	
AERIAL PHOTOGRAPH, JULY 20, 2004	
Baysinger Partners Architecture PC 1006 SE Grand Ave, Suite 300 Portland, OR 97214	
SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

environmental technology consultants

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360-696-4403

FIGURE 4	
AERIAL PHOTOGRAPH, JUNE 22, 2009	
Baysinger Partners Architecture PC 1006 SE Grand Ave, Suite 300 Portland, OR 97214	
SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

FIGURE 5	
AERIAL PHOTOGRAPH, APRIL 17, 2015	
Baysinger Partners Architecture PC 1006 SE Grand Ave, Suite 300 Portland, OR 97214	
SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

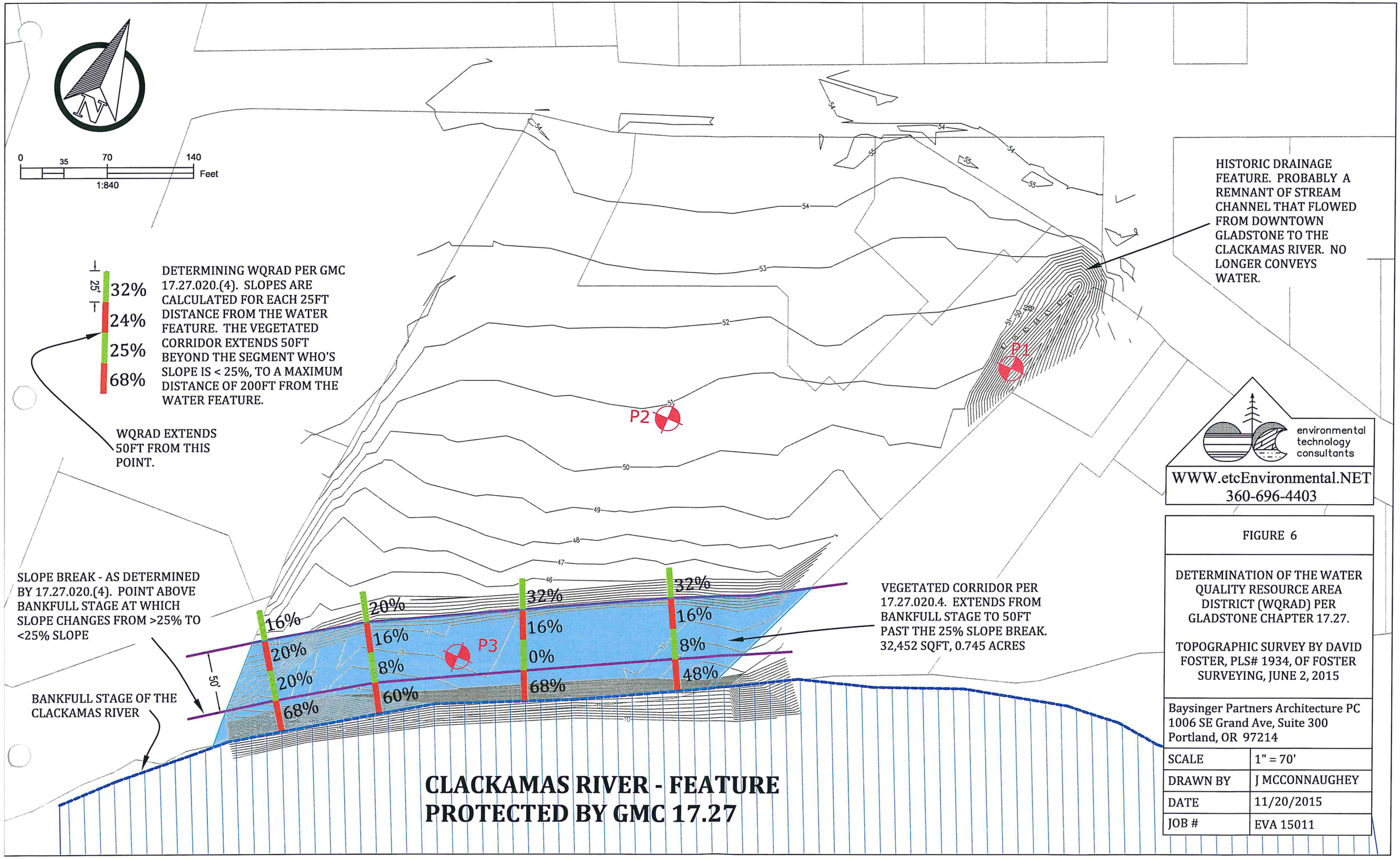

FIGURE 6

DETERMINATION OF THE WATER QUALITY RESOURCE AREA DISTRICT (WQRAD) PER GLADSTONE CHAPTER 17.27.

TOPOGRAPHIC SURVEY BY DAVID FOSTER, PLS# 1934, OF FOSTER SURVEYING, JUNE 2, 2015

Baysinger Partners Architecture PC
1006 SE Grand Ave, Suite 300
Portland, OR 97214

SCALE	1" = 70'
DRAWN BY	J MCCONNAUGHEY
DATE	11/20/2015
JOB #	EVA 15011

APPENDIX D

Ground Level Site Photographs

Photo 1. An overview of the subject property developable area.
ETC Photo 11/30/2015

Photo 2. The vegetated gulch that is dry and has no indication of wetland or hydrology features. This probably was a small tributary to the Clackamas prior to urban development in the area. It now conveys no surface water.

ETC Photo 11/30/2015

Photo 3. An overview of the vegetated corridor along the Clackamas River. The bark chips are evident in this picture along with the sparse vegetation and trees.

ETC Photo 11/30/2015

Photo 4. Looking across the site from the NE corner. The current owners posted signs to discourage usage of the site as dumping grounds for wood chips.

ETC Photo 11/30/2015

Photo 5. The Clackamas River shoreline along the site. The arrow points to pink flagging marking the surveyor's estimate of OHW.

ETC Photo 11/30/2015

Photo 6. Geese graze on the emergent grasses. Walgreens in the background.

ETC Photo 11/30/2015

APPENDIX D) Literature Citations

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Chapter 17.27 WQ—WATER QUALITY RESOURCE AREA DISTRICT

17.27.040 Uses within the WQ District.

(1) Uses Allowed Outright.
- (a) Stream, wetland, riparian and upland enhancement or restoration projects;
- (b) Placement of structures that do not require a grading or building permit;
- (c) Maintenance of existing structures, roadways, driveways, utility facilities, accessory uses and other development;
- (d) Planting of vegetation listed on the Gladstone Native Plant List;
- (e) Removal of vegetation listed on the Gladstone Prohibited Plant List;
- (f) Removal of dead or diseased trees or trees that pose an imminent hazard to persons or property;
- (g) Removal of vegetation, except trees of 1.5 inches or greater caliper, provided such removal shall not result in more than 10 percent of the area of the vegetated corridor being devoid of vegetation.

(2) Uses Allowed Under Prescribed Conditions.
- (a) Repair, replacement or improvement of utility facilities where the disturbed portion of the water quality resource area is restored and vegetation is replaced with vegetation identified on the Gladstone Native Plant List;
- (b) Additions, alterations, rehabilitation, or replacement of existing structures, roadways, driveways, accessory uses and other development that do not increase existing structural footprints in the water quality resource area where the disturbed portion of the water quality resource area is restored and vegetation is replaced with vegetation identified on the Gladstone Native Plant List;
- (c) Measures to remove or abate nuisances, or any other violation of statute, administrative rule or ordinance, where such measures are required by government order and the disturbed portion of the water quality resource area is restored and vegetation is replaced with vegetation identified on the Gladstone Native Plant List.

(3) Uses Subject to Review. The following uses are allowed subject to compliance with the application requirements and development standards of GMC Sections 17.27.042 and 17.27.045:
- (a) Any use allowed in the underlying zoning district, other than those listed in GMC Subsections 17.27.040 (1) and (2);
- (b) Roads to provide access to protected water features or necessary ingress and egress across water quality resource areas;
- (c) New public or private utility facility construction;
- (d) Walkways and bike paths subject to GMC Subsection 17.27.045(1)(f);
- (e) New stormwater pretreatment facilities, subject to GMC Subsection 17.27.045(1)(g);
- (f) Widening an existing road within a water quality resource area;
- (g) Additions, alternations, rehabilitation or replacement of existing structures, driveways, accessory uses and other development that increase the structural footprint within the water quality resource area.

(4) Prohibited Uses.
- (a) Any new development, other than that listed in GMC Subsections 17.27.040(1), (2) and (3);
- (b) Uncontained areas of hazardous materials as defined by the Department of Environmental Quality.

RESPONSE: All uses and development proposed lay outside of the high water line; therefore the Water Feature and Vegetated Corridor will not be impacted. All uses are therefore allowed as they are permitted by the underlying base zone.

.7.27.042 Application requirements.

(1) Applications for uses subject to review must provide the following information in a water resources report in addition to the information required for the underlying zoning district. An application shall not be complete until all of the following information is provided. The water resources report shall be stamped by a registered professional engineer or surveyor licensed by the State of Oregon.

(a) A topographic map of the site at contour intervals of five feet or less showing a delineation of the water quality resource area;

RESPONSE: All contours are shown on the included Topographic Plan. This criterion is therefore met.

(b) The location of all existing natural features including, but not limited to, all trees of a caliper greater than six inches diameter at a height of four feet, natural or historic drainages on the site, springs, seeps, outcroppings of rocks and boulders within the water quality resource area;

(c) Location of wetlands that qualify as primary protected water features. Where such wetlands are identified, a delineation shall be made by a qualified wetlands specialist pursuant to the Division of State Lands' recommended wetlands delineation process;

(d) An inventory and location of existing debris, nuisance vegetation, and any noxious or hazardous materials;

(e) An assessment of the existing condition of the water quality resource area in accordance with Table 2;

(f) An inventory of vegetation, including percentage ground and canopy coverage;

(g) An alternatives analysis in conformance with the requirements of GMC Subsections 17.27.045(1)(a) and (b);

(h) A water quality resource area mitigation plan. The plan shall contain the following information:
- (A) A description of adverse impacts that will be caused as a result of development;
- (B) An explanation of how adverse impacts to resource areas will be avoided, minimized, and/or mitigated in accordance with, but not limited to, Table 2;
- (C) A list of all responsible parties including, but not limited to, the owner, applicant, contractor or other persons responsible for work on the development site;
- (D) A map showing where the specific mitigation activities will occur;
- (E) An implementation schedule, including a timeline for construction, mitigation, mitigation maintenance, monitoring, reporting and a contingency plan. All in-stream work in fish-bearing streams shall be done in accordance with the Oregon Department of Fish and Wildlife in-stream timing schedule.
  - (i) If applicable, any requests to vary from this chapter's standards pursuant to GMC Section 17.27.070 (variances);

RESPONSE: There are no wetlands located on the site. All uses and development proposed lay outside of the high water line. The Water Feature and Vegetated Corridor will be located exclusively in Tract A, which is a river buffer conservation tract that will be dedicated to the City. No development on Tract A is proposed, and no impact to the Water Feature and Vegetated Corridor is expected. For these reasons, it is not necessary to identify the natural features within Tract A, consider alternatives or create a water quality resource area mitigation plan.

17.27.045 Development standards.

(1) Approvals for uses subject to review shall satisfy the following standards:
(a) No practicable alternative locations exist for the requested development that will not disturb the water quality resource area;

RESPONSE: All uses and development proposed lay outside of the high water line; therefore the Water Feature and Vegetated Corridor will not be impacted.

(b) No reasonably practicable alternative design or method of development exists that would have a lesser impact on the water quality resource area than the one proposed. If no such reasonably practicable alternative design or method of development exists, the city shall condition the project to:
(A) Limit its disturbance and impact on the water quality resource area to the minimum extent necessary to achieve the proposed development; and
(B) Ensure that impacts to the functions and values of the water quality resource area will be mitigated or impacted areas restored to the extent practicable;

RESPONSE: All uses and development proposed lay outside of the high water line; therefore the Water Feature and Vegetated Corridor will not be impacted.

(c) The water quality resource area shall be restored and maintained in accordance with the mitigation plan and the specifications in Table 2;

RESPONSE: All uses and development proposed lay outside of the high water line; therefore the Water Feature and Vegetated Corridor will not be impacted.

(d) To the greatest extent practicable, existing vegetation shall be protected and left in place. Work areas shall be carefully located and marked to reduce potential damage to the water quality resource area. Trees in the water quality resource area shall not be used as anchors for stabilizing construction equipment.

RESPONSE: All uses and development proposed lay outside of the high water line; therefore the Water Feature and Vegetated Corridor will not be impacted. All work areas will be carefully located and marked to reduce potential damage.

(e) Prior to construction, the water quality resource area shall be flagged, fenced or otherwise marked and shall remain undisturbed except as allowed by this chapter. Such markings shall be maintained until construction is complete.

RESPONSE: All uses and development proposed lay outside of the high water line; therefore the Water Feature and Vegetated Corridor will not be impacted. The water

quality resource area will be flagged, fenced or marked in some fashion prior to construction to ensure it remains undisturbed.

(f) Walkways and bike paths shall be subject to the following standards:
- (A) Where it is not practicable to maintain a setback of greater than 30 feet from a protected water feature, a maximum of ten percent of the total area of a gravel, earthen, tree bark product or equivalent walkway or bike path may be within 30 feet of the protected water feature.
- (B) For any paved walkway or bike path, the width of the water quality resource area on the subject property shall be increased by a distance equal to the width of the paved path. Where it is not practicable to maintain a setback of greater than 30 feet from a protected water feature, a maximum of ten percent of the total area of the walkway or bike path may be within 30 feet of the protected water feature.
- (C) A walkway or bike path under either subsection (A) or (B) of this subsection shall not exceed ten feet in width, shall not be constructed closer than ten feet from the boundary of the protected water feature, and shall be constructed so as to minimize disturbance to existing vegetation.

RESPONSE: No walkways or bike paths are proposed as part of this project, so these criteria do not apply.

(g) Stormwater pretreatment facilities.
- (A) A stormwater pretreatment facility may encroach a maximum of 25 feet into the outside boundary of the water quality resource area of a primary protected water feature.
- (B) A stormwater pretreatment facility may encroach a maximum of five feet into the outside boundary of the water quality resource area of a secondary protected water feature.
- (C) The area of encroachment must be replaced by adding an equal area to the water quality resource area on the subject property.
- (D) All stormwater shall be collected on-site and passed through a treatment facility, such as a detention/composting facility or filter as approved by the City Administrator or designee, prior to being discharged into the water quality resource area.

RESPONSE: The proposed design does not include any stormwater pretreatment facility with the WQRD. Refer to the included civil drawings. This criterion is therefore met.

Table 2
Water Quality Resource Area Mitigation Requirements.

Existing Condition of Water Quality Resource Area	**Mitigation Requirements**
Good Existing Corridor: Combination of trees, shrubs and groundcover are 80 percent present, and there is more than 50 percent tree canopy coverage in the vegetated corridor.	If Area is disturbed during construction: 1. Restore and mitigate according to approved plan using plants identified on the Gladstone Native Plant List. 2. Remove debris.

	3. Prior to construction, a qualified professional shall prepare and submit a plan for mitigating water quality impacts related to the development, including: sediments, temperature nutrients, sediment control, temperature control, or any other condition that may have caused the protected water feature to be listed on DEQ's 303(d) list. 4. Re-vegetation must occur during the next planting season following site disturbance. Seeding may be required prior to establishing plants for site stabilization. Annual replacement of plants that do not survive is required until vegetation representative of natural conditions is established on the site. If Area is undisturbed during construction: 1. Remove debris
Marginal Existing Corridor: Combination of trees, shrubs and groundcover are 80 percent present, and there is 25 to 50 percent tree canopy coverage in the vegetation corridor.	If Area is disturbed during construction: 1. Restore and mitigate according to approved plan using plants identified on the Gladstone Native Plant List that would reasonably represent the vegetative composition that would naturally occur on the site. 2. Remove debris. 3. Re-vegetation must occur during the next planting season following site disturbance. Seeding may be required prior to establishing plants for site stabilization. Annual replacement of plants that do not survive is required until vegetation representative of natural conditions is established on the site. If Area is undisturbed during construction: 1. Remove debris.
Degraded Existing Corridor: Less vegetation and canopy coverage than marginal vegetated corridors, and/or greater than ten percent surface coverage of any non-native species.	If Area is disturbed during construction: 1. Restore and mitigate according to approved plan using plants identified on the Gladstone Native Plant List that would reasonably represent the vegetative composition that would naturally occur on the site. 2. Remove debris.

	3. Re-vegetation must occur during the next planting season following site disturbance. Seeding may be required prior to establishing plants for site stabilization. Annual replacement of plants that do not survive is required until vegetation representative of natural conditions is established on the site. If Area is undisturbed during construction: 1. Vegetate bare areas with plants identified on the Gladstone Native Plant List. 2. Remove non-native species with re-vegetate with plants identified on the Gladstone Native Plant List. 3. Remove debris

17.27.050 Subdivisions and partitions.

(1) Subdivision and partition plats shall delineate the water quality resource area as a separate tract or part of a larger tract that meets the requirements of this subsection. The water quality resource area shall not be part of any lot or parcel used for construction of a dwelling unit. Prior to final plat approval, the water quality resource area tract shall be identified as one of the following:
(a) Private open space; or
(b) Public open space where the tract has been dedicated to a governmental unit by mutual agreement.

RESPONSE: The water quality resource area will be a part of Tract A, which is a river buffer conservation tract that will be dedicated to the City. This criterion is therefore met.

TITLE 3: WATER QUALITY AND FLOOD MANAGEMENT

3.07.320 Applicability

A. Title 3 applies to:

1. Development in Water Quality Resource and Flood Management Areas.
2. Development which may cause temporary or permanent erosion on any property within the Metro Boundary.

3.07.340 Performance Standards

A. Flood Management Performance Standards.

2. All development, excavation and fill in the Flood Management Areas shall conform to the following performance standards:

a. Development, excavation and fill shall be performed in a manner to maintain or increase flood storage and conveyance capacity and not increase design flood elevations.

RESPONSE: At this time the project has been designed so that all fill has been balanced with equal cuts so as to ensure that it does not negatively impact or decrease the flood storage or conveyance capacity nor increase flood elevations. This includes the installation of a Stormtech flood storage system. However, it should be noted that investigation into the boundary certified above the floodplain per the 2008 FEMA CLOMR is ongoing. Results from this investigation may show that all work proposed as part of this project already lies above the flood level and therefore cut and fill balancing and the proposed flood storage system would not be required. Evidence of such will be submitted as soon as it is confirmed; however, to ensure the project complies with all regulations the current drawings account for a "worst-case" scenario to demonstrate that the project as proposed can be constructed without negative impacts to the floodplain. Refer to the prior narrative sections regarding WQRD (Water Quality Resource Area District) and FM (Flood Management Area District) sections of the Gladstone zoning code for detailed responses. Also refer to the included site plan and civil drawings. This criterion is therefore met.

b. All fill placed at or below the design flood elevation in Flood Management Areas shall be balanced with at least an equal amount of soil material removal.

RESPONSE: All fill has been accounted for with equal amount of soil removal. A Stormtech flood water storage system will be employed to ensure the fill proposed is balanced and the floodplain capacity not negatively impacted. Refer to the included civil drawings for details on the system design. This criterion is therefore met.

c. Excavation shall not be counted as compensating for fill if such areas will be filled with water in non-storm winter conditions.

RESPONSE: No excavations intended to storm water in non-storm winter conditions have been included and counted as compensation for fill. This criterion is therefore met.

d. Minimum finished floor elevations for new habitable structures in the Flood Management Areas shall be at least one foot above the design flood elevation.

RESPONSE: The minimum design flood elevation for this location is 48 feet. The proposed finished floors of the three buildings are 51 feet (fitness) and approximately 54 feet for the two pad buildings. All buildings finished floors will therefore be more than one foot above the design flood elevation.

e. Temporary fills permitted during construction shall be removed.

RESPONSE: There are no temporary fills associated with the project. This criterion does not apply.

f. Uncontained areas of hazardous materials as defined by DEQ in the Flood Management Area shall be prohibited.

RESPONSE: The project area does not include any area of hazardous materials. This criterion therefore does not apply.

B. Water Quality Performance Standards.

2. Local codes shall require all development in Water Quality Resource Areas to conform to the following performance standards:

a. The Water Quality Resource Area is the vegetated corridor and the Protected Water Feature. The width of the vegetated corridor is specified in Table 3.07-3. At least three slope measurements along the water feature, at no more than 100-foot increments, shall be made for each property for which development is proposed. Depending on the width of the property, the width of the vegetated corridor will vary.

RESPONSE: No development is proposed in a Water Quality Resource Area, so this criterion does not apply. Development will occur only on Lots 1, 2 and 3. The WQRA will be located in the undevelopable Tract A, which will be dedicated to the City. Tract A will exceed 100 feet in width, which is in excess of buffer standards in Table 3.07-3.

b. Water Quality Resource Areas shall be protected, maintained, enhanced or restored as specified in Section 3.07.340(B)(2).

RESPONSE: The Water Quality Resource Area will be protected and maintained because all development associated with the project will remain outside of Tract A, which includes the 100 foot buffer. As there is no work or disturbance proposed within the buffer (vegetated corridor) there is no required restoration. This criterion is therefore met.

c. Prohibit development that will have a significant negative impact on the functions and values of the Water Quality Resource Area, which cannot be mitigated in accordance with subsection 2(f).

RESPONSE: All development associated with the project will remain outside of this 100 foot buffer; therefore the Water Quality Resource Area will be protected and maintained. As there is no work or disturbance proposed within the buffer (vegetated corridor) there is no required restoration. This criterion is therefore met.

d. Native vegetation shall be maintained, enhanced or restored, if disturbed, in the Water Quality Resource Area. Invasive non-native or noxious vegetation may be removed from the Water Quality Resource Area. Use of native vegetation shall be encouraged to enhance or restore the Water Quality Resource Area. This shall not preclude construction of energy dissipaters at outfalls consistent with watershed enhancement, and as approved by local surface water management agencies.

RESPONSE: All development associated with the project will remain outside of this 100 foot buffer; therefore the Water Quality Resource Area will be protected and maintained. As there is no work or disturbance proposed within the buffer (vegetated corridor) there is no required restoration. This criterion is therefore met.

e. Uncontained areas of hazardous materials as defined by DEQ in the Water Quality Resource Area shall be prohibited.

RESPONSE: The project area does not include any area of hazardous materials. This criterion therefore does not apply.

C. Erosion and Sediment Control.

1. The purpose of this section is to require erosion prevention measures and sediment control practices during and after construction to prevent the discharge of sediments.

2. Erosion prevention techniques shall be designed to prevent visible and measurable erosion as defined in Title 10.

RESPONSE: The project includes a civil erosion control plan. Erosion prevention techniques will be implemented to ensure that all erosion control standards are met. This criterion is therefore met.

3. To the extent erosion cannot be completely prevented, sediment control measures shall be designed to capture, and retain on-site, soil particles that have become dislodged by erosion.

RESPONSE: The project includes a civil erosion control plan. Sediment control techniques will be implemented to ensure that all sediment control standards are met. This criterion is therefore met.

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Flood Insurance Program

ELEVATION CERTIFICATE

Important: Read the instructions on pages 1–9.

OMB No. 1660-0008
Expiration Date: July 31, 2015

SECTION A – PROPERTY INFORMATION

FOR INSURANCE COMPANY USE
Policy Number:
Company NAIC Number:

A1. Building Owner's Name Parker Landing, LLC

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.

City Gladstone State OR ZIP Code 97027

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)
22E20, Lot 600, 601, 602

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) Commercial

A5. Latitude/Longitude: Lat. 46.375 Long. -122.601 Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number 1A

A8. For a building with a crawlspace or enclosure(s):
- a) Square footage of crawlspace or enclosure(s) NA sq ft
- b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade NA
- c) Total net area of flood openings in A8.b NA sq in
- d) Engineered flood openings? ☐ Yes ☐ No

A9. For a building with an attached garage:
- a) Square footage of attached garage NA sq ft
- b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade NA
- c) Total net area of flood openings in A9.b NA sq in
- d) Engineered flood openings? ☐ Yes ☐ No

SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number	B2. County Name	B3. State
Gladstone 410017	Clackamas	Oregon

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/Revised Date	B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use base flood depth)
38	D	6/17/08	june 17, 2008	AE	48

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9.
☐ FIS Profile ☒ FIRM ☐ Community Determined ☒ Other/Source: LOMR-F

B11. Indicate elevation datum used for BFE in Item B9: ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No
Designation Date: _____ ☐ CBRS ☐ OPA

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☒ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

Benchmark Utilized: _____ Vertical Datum: _____

Indicate elevation datum used for the elevations in items a) through h) below. ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____
Datum used for building elevations must be the same as that used for the BFE.

		Check the measurement used.	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	51.00	☒ feet	☐ meters
b) Top of the next higher floor	_____.____	☐ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	_____.____	☐ feet	☐ meters
d) Attached garage (top of slab)	_____.____	☐ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	_____.____	☐ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	47.50	☒ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	50.95	☒ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	_____.____	☐ feet	☐ meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*

☐ Check here if comments are provided on back of form.
☐ Check here if attachments.

Were latitude and longitude in Section A provided by a licensed land surveyor? ☐ Yes ☒ No

REGISTERED PROFESSIONAL ENGINEER 58412PE OREGON July 15, 2008 CRAIG N. HARRIS
EXPIRES: 6/30/17

Certifier's Name Craig Harris License Number 58412PE

Title Principal Company Name AAI Engineering

Address 4875 SW Griffith Dr, 300 City Beaverton State OR ZIP Code 97140

Signature Date 11/18/15 Telephone 503.620.3030

IMPORTANT: In these spaces, copy the corresponding information from Section A.	FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.	Policy Number:
City Gladstone State OR ZIP Code 97	Company NAIC Number:

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION (CONTINUED)

Copy both sides of this Elevation Certificate for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments

Signature Date

SECTION E – BUILDING ELEVATION INFORMATION (SURVEY NOT REQUIRED) FOR ZONE AO AND ZONE A (WITHOUT BFE)

For Zones AO and A (without BFE), complete Items E1–E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1–E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

E1. Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).
a) Top of bottom floor (including basement, crawlspace, or enclosure) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.
b) Top of bottom floor (including basement, crawlspace, or enclosure) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the LAG.

E2. For Building Diagrams 6–9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 8–9 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E3. Attached garage (top of slab) is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E4. Top of platform of machinery and/or equipment servicing the building is _____._____ ☐ feet ☐ meters ☐ above or ☐ below the HAG.

E5. Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community's floodplain management ordinance? ☐ Yes ☐ No ☐ Unknown. The local official must certify this information in Section G.

SECTION F – PROPERTY OWNER (OR OWNER'S REPRESENTATIVE) CERTIFICATION

The property owner or owner's authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.

Property Owner's or Owner's Authorized Representative's Name

Address City State ZIP Code

Signature Date Telephone

Comments

☐ Check here if attachments.

SECTION G – COMMUNITY INFORMATION (OPTIONAL)

The local official who is authorized by law or ordinance to administer the community's floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8–G10. In Puerto Rico only, enter meters.

G1. ☐ The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

G2. ☐ A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

G3. ☐ The following information (Items G4–G10) is provided for community floodplain management purposes.

G4. Permit Number	G5. Date Permit Issued	G6. Date Certificate Of Compliance/Occupancy Issued

G7. This permit has been issued for: ☐ New Construction ☐ Substantial Improvement

G8. Elevation of as-built lowest floor (including basement) of the building: _____._____ ☐ feet ☐ meters Datum _____

G9. BFE or (in Zone AO) depth of flooding at the building site: _____._____ ☐ feet ☐ meters Datum _____

G10. Community's design flood elevation: _____._____ ☐ feet ☐ meters Datum _____

Local Official's Name Title

Community Name Telephone

Signature Date

Comments

☐ Check here if attachments.

Building Photographs

See Instructions for Item A6.

IMPORTANT: In these spaces, copy the corresponding information from Section A.

			FOR INSURANCE COMPANY USE
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			Policy Number:
City	State	ZIP Code	Company NAIC Number:

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.

Building Photographs

Continuation Page

IMPORTANT: In these spaces, copy the corresponding information from Section A.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.			FOR INSURANCE COMPANY USE Policy Number:
City	State	ZIP Code	Company NAIC Number:

If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8.

Federal Emergency Management Agency

Washington, D.C. 20472

October 21, 2008

THE HONORABLE WADE BYERS
CITY OF GLADSTONE
CITY HALL
525 PORTLAND AVE
GLADSTONE, OR 97027

CASE NO.: 08-10-0882A
COMMUNITY: CITY OF GLADSTONE, CLACKAMAS COUNTY, OREGON
COMMUNITY NO.: 410017

DEAR MR. BYERS:

This is in reference to a request that the Federal Emergency Management Agency (FEMA) determine if the property described in the enclosed document is located within an identified Special Flood Hazard Area, the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), on the effective National Flood Insurance Program (NFIP) map. Using the information submitted and the effective NFIP map, our determination is shown on the attached Letter of Map Revision based on Fill (LOMR-F) Determination Document. This determination document provides additional information regarding the effective NFIP map, the legal description of the property and our determination.

Additional documents are enclosed which provide information regarding the subject property and LOMR-Fs. Please see the List of Enclosures below to determine which documents are enclosed. Other attachments specific to this request may be included as referenced in the Determination/Comment document. If you have any questions about this letter or any of the enclosures, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, 3601 Eisenhower Avenue, Suite 130, Alexandria, VA 22304-6439.

Sincerely,

William R Blanton Jr

William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

LIST OF ENCLOSURES:

LOMR-F DETERMINATION DOCUMENT (REMOVAL)

cc: State/Commonwealth NFIP Coordinator
Community Map Repository
Region
Mr. Don Devlaeminck
Hon. Wade Byers

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

LEGAL PROPERTY DESCRIPTION (CONTINUED)

COMMENCING at the northeast corner of tax lot 600; thence S05°09'53"W, 324.47 feet; thence S06°28'49"W, 7.15 feet; thence S01°34'40"W, 13.31 feet; thence S04°34'46"E, 18.32 feet; thence S67°01'35"W, 32.58 feet; thence S02°50'48"E, 5.87 feet; thence S22°23'52"E, 7.79 feet; thence S79°11'26"E, 15.83 feet; thence N59°59'03"E, 13.36 feet; thence N76°48'43"E, 36.44 feet; thence N69°32'19"E, 18.60 feet; thence S76°59'03"E, 29.21 feet; thence N60°44'42"W, 53.56 feet; thence N61°49'19"W, 51.50 feet; thence N63°25'53"E, 47.66 feet; thence N64°55'14"E, 47.70 feet; thence N64°14'12"E, 49.53 feet; thence N66°43'31"E, 15.00 feet; thence N37°41'57"E, 17.08 feet; thence N16°50'47"E, 12.77 feet; thence N32°32'04"E, 28.95 feet; thence N54°40'36"E, 17.41 feet; thence N21°53'52"E, 112.78 feet; thence N49°17'46"W, 10.05 feet; thence N07°42'59"E, 30.22 feet; thence N16°31'14"E, 27.92 feet; thence N00°33'04"W, 24.21 feet; thence N134°35'16"E, 48.13 feet; thence S69°48'35"E, 13.01 feet; thence S61°05'32"E, 11.09 feet; thence S84°56'55"E, 2.46 feet; thence N23°35'04"W, 27.42 feet; thence N81°52'06"W, 184.64 feet; thence S66°24'56"W, 195.56 feet; thence S70°25'12"W, 51.25 feet; thence S79°22'57"W, 64.78 feet to the POINT OF THE BEGINNING

PORTIONS OF THE PROPERTY REMAIN IN THE FLOODWAY (This Additional Consideration applies to the preceding 1 Property.)

A portion of this property is located within the Special Flood Hazard Area and the National Flood Insurance Program (NFIP) regulatory floodway for the flooding source indicated on the Determination/Comment Document while the subject of this determination is not. The NFIP regulatory floodway is the area that must remain unobstructed in order to prevent unacceptable increases in base flood elevations. Therefore, no construction may take place in an NFIP regulatory floodway that may cause an increase in the base flood elevation, and any future construction or substantial improvement on the property remains subject to Federal, State/Commonwealth, and local regulations for floodplain management. The NFIP regulatory floodway is provided to the community as a tool to regulate floodplain development. Modifications to the NFIP regulatory floodway must be accepted by both the Federal Emergency Management Agency (FEMA) and the community involved. Appropriate community actions are defined in Paragraph 60.3(d) of the NFIP regulations. Any proposed revision to the NFIP regulatory floodway must be submitted to FEMA by community officials. The community should contact either the Regional Director (for those communities in Regions I-IV, and VI-X), or the Regional Engineer (for those communities in Region V) for guidance on the data which must be submitted for a revision to the NFIP regulatory floodway. Contact information for each regional office can be obtained by calling the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or from our web site at http://www.fema.gov/about/regoff.htm.

SUPERSEDES OUR PREVIOUS DETERMINATION (This Additional Consideration applies to all properties in the LOMR-F DETERMINATION DOCUMENT (REMOVAL))

This Determination Document supersedes our previous determination dated 9/4/2008, for the subject property.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, 3601 Eisenhower Avenue, Suite 130, Alexandria, VA 22304-6439.

William R Blanton Jr

William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

 | Date: October 21, 2008 | Case No.: 08-10-0882A | LOMR-F

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	CITY OF GLADSTONE, CLACKAMAS COUNTY, OREGON	A portion of Sections 19, 20 and 30, Township 2 South, Range 2 East, Willamette Meridian, as described in the Statutory Warranty Deed recorded as Document No. 2008-009798, in the Office of the County Clerk, Clackamas County, Oregon (TL: 600) The portion of property is more particularly described by the following metes and bounds:
	COMMUNITY NO.: 410017	
AFFECTED MAP PANEL	NUMBER: 41005C0038D; 41005C0276D	
	DATE: 6/17/2008; 6/17/2008	
FLOODING SOURCE: CLACKAMAS RIVER		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 45.376, -122.599 SOURCE OF LAT & LONG: PRECISION MAPPING STREETS 7.0 DATUM: NAD 83

DETERMINATION

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
--	--	--	--	Property	X (shaded)	48.0 feet	--	48.0 feet

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)

LEGAL PROPERTY DESCRIPTION
PORTIONS REMAIN IN THE FLOODWAY
SUPERSEDES PREVIOUS DETERMINATION

This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Revision based on Fill for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document revises the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, 3601 Eisenhower Avenue, Suite 130, Alexandria, VA 22304-6439.

William R Blanton Jr

William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

Chapter 17.29 FM—FLOOD MANAGEMENT AREA DISTRICT

17.29.020 Applicability.

(1) This chapter shall apply to development in the FM district. The FM district includes all flood management areas and is an overlay district.
(2) The standards that apply in the FM district apply in addition to state and federal restrictions governing flood management areas.

RESPONSE: Via a FEMA LOMR dated October 21, 2008 (see letter included with submittal) the site, above the 48 foot flood level is no longer considered within the Flood Management Area. Only those area below the 48 foot contour are regulated by this Chapter. At this time there is ongoing investigation to the exact boundary contained within that LOMR letter. Until that boundary is confirmed, the project has been designed to a "worst-case" scenario in which a portion of the development resides within the floodplain and therefore requires cut and fill balancing. This will be accomplish via a Stormtech flood storage system. However, should the investigation reveal that all the area currently proposed for development already resides above the certified 48 foot level of the prior LOMR the balancing and storm storage system may not be needed. Evidence of such will be presented when confirmed. Until then the project will proceed with review and approval of the "worst-case" scenario to demonstrate that the project as proposed can be constructed without negative impacts to the floodplain.

17.29.030 Basis for establishing flood management areas.

(3) Flood management areas also include lands that have physical or documented evidence of flooding within recorded history, including areas of inundation for the February 1996 flood. The most recent and technically accurate information available, such as aerial photographs of the 1996 flooding and digitized flood elevation maps, shall be used to determine the historical flood area.

RESPONSE: While the project was subject to the February 1996 flood inundation, work completed under a 2002 Grading Permit brought the majority of the site above the 48 foot flood elevation level. A FEMA LOMR letter (see included letter) certifies that all areas above the 48 foot floor level are no longer with in the floodplain. Thus, the regulations of this chapter pertain only to those areas closest to the river that remain below the 48 foot elevation.

17.29.060 FM district development permits.

(1) An FM District development permit shall be obtained before construction or development begins within the FM district. A permit shall be required for all structures, including manufactured homes, and all other development, including fill and other activities.

RESPONSE: All required permits will be obtained prior to the start of construction or development. This criterion will therefore be met.

(2) Application for a development permit shall be made on forms furnished by the city. Requirements may include, but are not limited to: plans in duplicate drawn to scale showing the nature, location, dimensions and elevations of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities and the location of the foregoing.

RESPONSE: A City of Gladstone Land Use Application form, as provided by the City, has been included with this submittal. All permits will be requested on forms provided by the City. This criterion is therefore met.

(3) The following information is specifically required:
- (a) Elevation in relation to mean sea level of the lowest floor (including basement) of all structures. Elevation data shall be submitted on current and effective FEMA Elevation Certificates;
- (b) Elevation in relation to mean sea level to which any structure has been floodproofed;
- (c) Certification by a registered professional engineer or architect that the floodproofing methods for any nonresidential structure meet the floodproofing criteria in GMC Subsection 17.29.100(6)(b); and
- (d) Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.

RESPONSE: A FEMA Elevations Certificate has be provided for the fitness building as the current plan shows the building's southwest corner slighting within the floodplain. The certificate demonstrates the finished floor areas in relation to the floor level as well as provided documentation of the elevation to which applicable buildings were floodproofed. The Elevation Certificate has been completed by a registered engineer associated with the project. This criterion will therefore be met.

17.29.100 Standards.

(1) The following uses are allowed outright:
- (a) Excavation and fill required to plant any new trees or vegetation, provided such activities do not constitute development;
- (b) Restoration or enhancement of floodplains, riparian areas, wetlands, upland and streams that meet federal and state standards, provided that any project which encroaches in the floodway complies with GMC Section 17.29.140 (floodways).

(2) All uses allowed in the underlying zoning district are allowed subject to compliance with the standards of this chapter.

RESPONSE: The proposed project does not include restoration or enhancement of the floodplain or stream nor excavation and fill associated with new vegetation. The project proposes construction of three buildings for uses (fitness and restaurant) that are allowed under the base zone. This criterion is therefore met.

(3) The following uses are prohibited:
- (a) Any use prohibited in the underlying zoning district;
- (b) Uncontained areas of hazardous materials as defined by the Department of Environmental Quality.

RESPONSE: The project does not include any prohibited uses. This criterion therefore does not apply.

(4) All development in the FM District shall conform to the following balanced cut and fill standards:

(b) No net fill in any floodplain is allowed. All fill placed in a floodplain shall be balanced with at least an equal amount of soil material removal. For the purposes of calculating net fill, fill shall include any structure below the design flood elevation that has been floodproofed pursuant to GMC Subsection 17.29.100(6)(b). Such information shall be certified by an engineer.

RESPONSE: The proposed project includes a small amount of construction within the floodplain along the south property line in the form of parking area and the southwest corner of the fitness building. All work within the floodplain has been accounted for through cut and fill balancing and installation of underground water storage chambers with arched openings, designed by certified civil engineers to ensure that the flood level is not negatively impacted. Refer to the included civil drawings and

(c) Any excavation below bankfull stage shall not count toward compensating for fill.

RESPONSE: The project does not include any excavation below bankfull stage. This criterion is therefore met.

(d) Excavation to balance a fill shall be located on the same parcel as the fill unless it is not practicable to do so. In such cases, the excavation shall be located in the same Gladstone floodplain, so long as the proposed excavation and fill will not increase flood impacts for surrounding properties as determined through hydrologic and hydraulic analysis.

RESPONSE: All excavation and the underground storage system will be located within Lot 602 which is where construction within the floodplain occurs. Refer to the included civil drawings. This criterion is therefore met.

(e) For excavated areas identified by the city to remain dry in the summer, such as parks or mowed areas, the lowest elevation of the excavated area shall be at least six inches above the winter "low water" elevation, and sloped at a minimum of two percent towards the protected water feature pursuant to GMC Chapter 17.27 (WQ – water quality resource area district). One percent slopes will be allowed in smaller areas.

RESPONSE: The project site does not include any areas designated to remain dry in summer. This criterion does not apply.

(f) For excavated areas identified by the city to remain wet in the summer, such as a constructed wetland, the grade shall be designed not to drain into the protected water feature pursuant to GMC Chapter 17.27 (WQ – water quality resource area district).

RESPONSE: The project site does not include any areas designated to remain wet in summer. This criterion does not apply.

(g) Minimum finished floor elevations shall be at least one foot above the design flood elevation or highest flood of record, whichever is higher, for new habitable structures in the flood area.

RESPONSE: The minimum finished floor elevations for the proposed buildings are approximately 54 feet for the pad buildings and 51 feet for the fitness building. The flood elevation is 48 feet. This criterion is met as all finished floors are more than one foot above the flood of record.

(h) Parking areas in the floodplain shall be accompanied by signs that inform the public that the parking area is located in a flood management area and that care should be taken when the potential for flooding exists.

RESPONSE: All parking located at or below the 48 foot flood contour will be appropriately signed. This criterion will therefore be met.

(i) Temporary fills permitted during construction shall be removed at the end of construction, 30 days after subdivision acceptance or completion of the final inspection.

RESPONSE: At this time the project does not include any temporary fill. This criterion therefore does not apply.

(j) New culverts, stream crossings and transportation projects shall be designed as balanced cut and fill projects or designed not to significantly raise the design flood elevation. Such projects shall be designed to minimize the area of fill in the FM District and to minimize erosive velocities. Stream crossings shall be as close to perpendicular to the stream as practicable. Bridges shall be used instead of culverts wherever practicable.

RESPONSE: The project does not include any culverts, stream crossings or transportation projects. This criterion does not apply.

(k) Excavation and fill required for the construction of detention facilities or structures, and other facilities, such as levees, specifically shall be designed to reduce or mitigate flood impacts and improve water quality. Such information shall be certified by an engineer. Levees shall not be used to create vacant buildable lands.

RESPONSE: All excavation and fill has been factored into the "worst-case" scenario presented. Refer to the included civil drawings and calculations for demonstration of the floodplain balancing. This criterion is therefore met.

(5) The following construction standards shall apply in all flood management areas:

(a) Anchoring.

(A) All new construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure.

RESPONSE: All new construction will be anchored to prevent flotation, collapse or lateral movement of the structure. Detailed drawings of these methods will be included with building permit drawings. This criterion will therefore be met.

(b) Construction Materials and Methods.

(A) All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

RESPONSE: All proposed construction will use materials and equipment that are resistant to flood damage. Proposed building materials include lap siding, brick, stucco, and high quality metal panel. This criterion is therefore met.

(B) All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.

RESPONSE: The finished floor elevations are raised and the buildings will be constructed of materials that resist flood damage. Utilities have been located to be outside of the flood elevation or raised. This criterion is met as all construction will take place through methods and practices that minimize flood damage.

(C) Electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

RESPONSE: All utilities have been located to be outside of the flood elevation or raised. Refer to the included drawings. This criterion is therefore met.

(c) Utilities.

(A) All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

RESPONSE: All water supply systems have been designed to minimize or eliminate infiltration of floodwaters; refer to the included utility plan and details. This criterion is therefore met.

(B) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters.

RESPONSE: All sanitary sewage systems have been designed to minimize or eliminate infiltration of floodwaters; refer to the included utility plan and details. This criterion is therefore met.

(C) On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

RESPONSE: All on-site waste disposal systems have been designed to minimize or eliminate infiltration of floodwaters; refer to the included utility plan and details. This criterion is therefore met.

(6) In all areas of special flood hazard where base flood elevation data has been provided (Zones A, AH and AE) as set forth in GMC Subsections 17.29.030(1) and (2), the following provisions are required:

(a) Residential Construction.

(B) The following standards apply to Below-Grade Crawl Spaces:

(i) The building must be designed and adequately anchored to resist flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy. Hydrostatic loads and the effects of buoyancy can usually be addressed through the required openings stated in Section (ii) below. Because of hydrodynamic loads, crawlspace construction is not allowed in areas with flood velocities greater that five (5) feet per second unless the design is reviewed by a qualified design professional, such as a registered architect or professional engineer. Other types of foundations are recommended for these areas.

(ii) The crawlspace is an enclosed area below the base flood elevation (BFE) and, as such, must have openings that equalize hydrostatic pressures by allowing the automatic entry and exit of floodwaters. The bottom of each flood vent opening can be no more that one (1) foot above the lowest adjacent exterior grade.

(iii) Portions of the building below the BFE must be constructed with materials resistant to flood damage. This includes not only the foundation walls of the crawlspace used to elevate the building, but also any joists, insulation, or other materials that extend below the BFE. The recommended construction practice is to elevate the bottom of joists and all insulation above BFE.

(iv) Any building utility systems within the crawlspace must be elevated above BFE or designed so that floodwaters cannot enter or accumulate within the system components during flood conditions. Ductwork, in particular, must either be placed above the BFE or sealed from floodwaters.

(v) The interior grade of a crawlspace below the BFE must not be more than two (2) feet below the lowest adjacent exterior grade.

(vi) The height of the below-grade crawlspace, measured from the interior grade of the crawlspace to the top of the crawlspace foundation wall must not exceed four (4) feet in any point. The height limitation is the maximum allowable unsupported wall height according to the engineering analyses and building code requirements for flood hazard areas.

(vii) There must be an adequate drainage system that removes floodwaters from the interior area of the crawlspace. The enclosed area should be drained within a reasonable time after a flood event. The type of drainage system will vary because of the site gradient and other drainage characteristics, such as soil types. Possible options include natural drainage through porous, well-drained soils and drainage systems such as perforated pipes, drainage tiles or gravel or crushed stone drainage by gravity or mechanical means.

(viii) The velocity of floodwaters at the site should not exceed five (5) feet per second for any crawlspace. For velocities in excess of five (5) feet per second, other foundation types should be used.

RESPONSE: Subsection 17.29.100(6)(b)(D) requires that nonresidential structures that are elevated, not floodproofed, comply with this section. The raised buildings do not include crawl spaces and will be raised with fill thus the requirements of this subsection do not apply.

(b) Nonresidential Construction. New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated at or above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:
   (A) Be floodproofed so that below the design flood level the structure is watertight with walls substantially impermeable to the passage of water, provided that the requirements of GMC Subsection 17.29.100 (4)(b) are met;
   (B) Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;
   (C) Be certified by a registered professional engineer or architect that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection based on their development and/or review of the structural design, specifications and plans. Such certifications shall be provided pursuant to GMC Subsection 17.29.070(2)(b)(B);
   (D) Nonresidential structures that are elevated, not floodproofed, shall comply with GMC Subsection 17.29.100(6)(a)(B); and
   (E) Applicants floodproofing nonresidential buildings shall be notified that flood insurance premiums will be based on rates that are one foot below the floodproofed level (e.g., a building floodproofed to the design flood level will be rated as one foot below that level).

RESPONSE: The base flood elevation is 48 feet. The lowest finished floor of the three buildings will be at 51 feet as indicated in the included FEMA Flood Elevation Certification. The buildings comply with Subsection 17.29.100(6)(a)(B). Refer to that narrative section for detailed information. This criterion is therefore met.

17.29.110 Review of building permits.

Where elevation data is not available either through the Flood Insurance Study, FIRM or pursuant to GMC Subsection 17.29.030(2), applications for building permits shall be reviewed to assure that proposed construction will be reasonably safe from flooding. The test of reasonableness shall be made by the City Administrator or designee, considering use of historical data, high water marks, photographs of past flooding, etc., where available, and the provisions of this chapter. Failure to elevate at least two feet above grade in these zones may result in higher insurance rates.

RESPONSE: The base flood elevation is 48 feet. The lowest finished floor of the three buildings will be at 51 feet as indicated in the included FEMA Flood Elevation Certification. This criterion is met as all finished floor elevations will be a minimum of two feet above the flood elevation.

17.29.120 Subdivision standards.

(1) Subdivisions shall be consistent with the need to minimize flood damage.
(2) Subdivisions shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize or eliminate flood damage.
(3) Subdivisions shall have adequate drainage provided to reduce exposure to flood damage.
(4) Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivisions and other proposed developments that contain at least 50 lots or five acres (whichever is less).

(5) Development of subdivisions, including development on newly created lots, shall comply with the standards of this chapter.

RESPONSE: The included partition replat will adhere to all flood management requirements as noted in the narrative above and flood damage will be minimized. This criterion is therefore met.

17.29.140 Floodways.

(1) Located within areas of special flood hazard established in GMC Section 17.29.030 (basis for establishing flood management areas) are areas designated as floodways. Because the floodway is an extremely hazardous area due to the velocity of floodwaters that carry debris, potential projectiles and erosion potential, the following provisions apply:

(a) Encroachments, including fill, new construction, substantial improvements and other development, shall be prohibited unless certification by a registered professional civil engineer is provided demonstrating through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

(b) New construction and substantial improvements shall comply with the applicable standards of GMC Sections 17.29.100 (standards), 17.29.110 (review of building permits) and 17.29.120 (subdivision standards).

RESPONSE: The project does not propose any development within the floodway. This criterion does not apply.

hapter 17.34 PARTITIONS

17.34.010 Applicability.

(1) A partition is the division of a lot of record into three or fewer parcels in one calendar year and shall be governed by this chapter.
(2) Except as provided in GMC Chapter 17.32 (subdivisions), no parcel in an approved partition may be divided in the same calendar year in which the final partition plat is recorded unless the initial partition created only two parcels and the second partition will create only one additional parcel.

RESPONSE: **Partition Plat 2008-063 created three (3) parcels on the subject property: Parcel 1 (tax lot 600), Parcel 2 (tax lot 601) and Parcel 3 (tax lot 602). The applicant's desired outcome is three developable units of land (Lots 1, 2 and 3) and a tract (Tract A) that can be dedicated for conservations purposes. This objective is achieved by partitioning Parcel 3 (tax lot 602) into two units (Lot 3 and Tract A) and a property line adjustment that reconfigures the interior lot lines between Parcels 1, 2 and 3.**

The application includes a partition and property line adjustments. Because these actions modify the previously approved Partition Plat 2008-063, the County surveyor will record the approvals as a replat. Accordingly, unless more detail is appropriate in response to a particular criterion, this combined application will refer to the partition and property line adjustments as the "replat."

17.34.020 Partitions—Generally.

(1) Submittal Requirements. An application for a partition shall include a tentative plan drawn to scale. A minimum of five (5) copies of the tentative plan shall be provided with an application for a Type I partition. A minimum of twelve (12) copies of the tentative plan shall be provided with an application for a Type II partition. The following information shall be provided on the tentative plan or, where it is impractical to include an item on the tentative plan, in a separate attachment:
   (a) Date the tentative plan was drawn;
   (b) North arrow;
   (c) Scale of drawing;
   (d) Township, Range, Section and Tax Lot numbers of the subject property and any contiguous property under the same ownership as the subject property;
   (e) Complete names, addresses and telephone numbers of the property owner(s), applicant(s) and person(s) who prepared the tentative plan;
   (f) Gross acreage of the subject property;
   (g) A general description of the topography of the subject property;
   (h) The locations, widths and names of all proposed streets and all existing or platted streets within or adjacent to the partition-site. Include proposed new curbs and sidewalks. Include existing curbs and sidewalks where necessary to show a connection to new curbs and sidewalks;
   (i) The locations and direction of flow of all watercourses and areas subject to flooding, including boundaries of areas of special flood hazard regulated by GMC Chapter 17.29 (FM -flood management area district);
   (j) The location of natural features, such as rock outcroppings, wetlands, wooded areas and individual large trees;
   (k) The location of proposed and existing utilities within the partition and the location of adjacent off-site utilities to which on-site utilities will connect. Include water; sanitary sewer; storm drainage with width, depth and direction of flow of any drainage channels; gas; electric, including power poles; and other utilities;
   (l) Zoning of the subject property;
   (m) The location, including width, of existing and proposed easements, to which property they are conveyed and for what purpose(s). Include easements on the subject property and off-site easements conveyed to the subject property;

(n) Identification of existing uses of the subject property, including the location of all existing structures. Identify whether existing structures will remain on the property or be removed. When a structure will remain, identify its setbacks from new property lines;
(o) Proposed parcels, including location, dimensions, area and parcel numbers;
(p) A master plan, to include a tentative layout of possible future lots and streets, may be required when proposed parcels or adjacent properties have the potential for additional land division;
(q) The location of any existing on-site sewage disposal systems and wells.

RESPONSE: All of the above information is listed on the preliminary plat, site plan and vicinity map included with the submittal materials. This criterion is therefore met.

(2) Type I and Type II Partitions. A Type I partition is any partition where the proposed parcels conform to the dimensional standards of the zoning district in which the subject property is located, creation of a flag lot is not proposed and access will be provided from a local street. Any other partition is a Type II partition.

RESPONSE: The requested partition divides Parcel 3 (tax lot 602) into Lot 3 and Tract A. Tract A is being created as a river buffer parcel that can be transferred to City ownership. The requested property line adjustment that reconfigures the interior lot lines between Parcels 1, 2 and 3, results in Lot 3 being a flag lot. Therefore, the application is a Type II partition.

(3) Review. An application for a partition shall be reviewed pursuant to GMC Division VII (administrative procedures).

RESPONSE: The request for the replat is being submitted with concurrent Design Review, HCA Map Verification, Construction Management Plan, WQRD Development Permit and Floodplain Development Permit applications and thus understood it will be reviewed on a concurrent schedule with those applications and review by the Planning Commission.

7.34.025 Final plat.

(1) Form and Content. The form and content of the final plat shall be consistent with relevant provisions of Oregon Revised Statutes Chapters 92 and 209.
(2) Review. Prior to recording, the final plat shall be submitted to the City Administrator, or designee, who shall review it to determine whether the partition as shown is substantially the same as it appeared in the approved tentative plan and whether there has been compliance with conditions of tentative plan approval.
(3) Approval. When satisfied that the final plat is consistent with the tentative plan approval and that compliance with conditions of tentative plan approval has been met, the City Administrator, or designee, shall sign the final plat.
(4) Filing. Following city approval of the final plat, the final plat shall be submitted to those Clackamas County officials who are required by state law to sign it. One copy of the recorded plat shall be submitted to the city.

RESPONSE: A Final Plat consistent with the Oregon Revised Statues Chapters 92 and 209 will be provided to the city Administrator and County Surveyor for review and approval prior to recoding the plat with the County. These criteria will therefore be met.

17.34.030 Improvements.

The same improvements shall be installed to serve each building site of a partition as are required of a subdivision. However, if the Planning Commission finds that the nature of development in the vicinity of the partition makes installation of some improvements unreasonable, the Planning Commission may except those improvements. In lieu of excepting an improvement, the Planning Commission may recommend to the City Council that the improvement be installed in the area under special assessment financing or other facility extension policies of the city.

RESPONSE: **All lots will be served with utilities and improvements per the concurrent Design Review development site plan. Tract A, the undevelopable river buffer conservation tract that will be dedicated to the City, will not be served with utilities. This criterion is therefore met.**

hapter 17.64 DESIGN STANDARDS FOR LAND DIVISIONS AND PROPERTY LINE ADJUSTMENTS

17.64.010 Applicability.

The design standards for land divisions and property line adjustments shall apply to all subdivisions, partitions and property line adjustments.

17.64.020 Blocks.

(1) General. The length, width and shape of blocks shall be designed with due regard for the provision of adequate building sites for the use contemplated, consideration of the need for traffic safety, convenience, access, circulation and control, and recognition of limitations and opportunities of topography.

RESPONSE: The project does not include the creation of blocks, so this criterion does not apply.

(2) Sizes. Except as modified by GMC Subsection 17.50.030(2), blocks shall not exceed one thousand feet (1,000′) in length between street lines, except for blocks adjacent to arterial streets or unless topography, barriers such as railroads or freeways, environmental constraints such as major streams and rivers, pre-existing development or the layout of adjacent streets require a modification. The recommended minimum distance between intersections on arterial streets is one thousand three hundred twenty feet (1,320′).

RESPONSE: The existing length of right-of-way frontage will not change with the proposed replat. No blocks will exceed 1,000 feet. This criterion is therefore met.

(3) Easements:

(a) Utility lines. Easements for sewers, drainage, water mains, electric lines or other public utilities shall be dedicated wherever necessary. The easements shall be a minimum of twelve feet (12′) in width and centered on rear or side lot lines at change of direction points of easements, except for guy wire tieback easements which shall be six feet (6′) wide by twenty feet (20′) long along lot lines.

RESPONSE: All required utility easements will be provided. Refer to the included Utility Plan for illustration of those easements. This criterion is therefore met.

(b) Watercourses. If a tract is traversed by a watercourse such as a drainage way, channel or stream, there shall be provided a storm water easement or drainage right-of-way conforming substantially with the lines of the watercourse and adequate in width for the purpose. Streets, parkways or greenways parallel to or integrated with major watercourses may be required.

RESPONSE: The project is not traversed by a watercourse aside from the abutting Clackamas River which does not flow through the site. This criterion therefore does not apply.

(c) Pedestrian and Bicycle Ways. Except as modified by GMC Subsection 17.50.030(2), in blocks over eight hundred feet (800′) in length, a pedestrian or bicycle way with a minimum width of ten feet (10′) shall be provided through the middle of the block when desirable for public convenience. If unusual conditions require blocks longer than one thousand two hundred feet (1,200′), two pedestrian ways may be required. When desirable for public convenience, or when called for in the Comprehensive Plan, pedestrian ways may be required to connect cul-de-sacs, to pass through unusually shaped blocks, or to facilitate a linked system of pedestrian ways or greenways or bicycle ways.

RESPONSE: The project does not include blocks. This criterion therefore does not apply.

(d) Greenways. When called for in the Comprehensive Plan, the Planning Commission may require the dedication, reservation or setting aside of greenways which will be open or accessible to the public. Except for trails or paths, such greenways will usually be left in a natural condition without improvements. Where appropriate, greenways may be combined with easements for utilities or watercourses.

ESPONSE: No construction is proposed within Tract A, the undevelopable river buffer conservation tract that will be dedicated to the City.

17.64.030 Building sites.

(1) Size and Shape. Lot size, width, shape and orientation shall be appropriate for the location of the subdivision and for the type of development and use contemplated. The width of a lot shall be at least fifty feet (50') except that corner lots shall have a width of at least sixty feet (60') to permit appropriate building setback from both streets. Minimum lot depth in a residential district shall be sixty feet (60'). In the case of irregular lots, the width shall be measured along the front building line. Except in a PUD development, in no case shall a lot area be less than the zoning district required. The Planning Commission may, when such a minimum in the case of multi-family dwelling subdivision development would result in a conflict with the minimum area requirements of the zoning ordinance, require larger minimum area requirement so as to conform to the zoning ordinance. These minimum standards shall apply with the following exceptions:

(a) Where property is zoned and planned for commercial or industrial use, other widths and areas may be permitted at the discretion of the Planning Commission. Depth and width of properties reserved or laid out for commercial and industrial purposes shall be adequate to provide for the off-street service and parking facilities required by the type of use and development contemplated.

RESPONSE: All lots will meet the minimum width and depth in excess of the minimum 50 feet required. This criterion is therefore met.

(2) Frontage. A lot shall have minimum frontage of twenty feet (20') on a street other than an alley.

RESPONSE: The developable Lots 1, 2 and 3, will have access onto Arlington Street in excess of 20 feet in width. This criterion will therefore be met.

(3) Through Lots and Parcels. Through lots and parcels shall be avoided except where they are essential to provide separation of residential development from major traffic arteries or adjacent nonresidential activities or to overcome specific disadvantages of topography and orientation. A planting screen easement at least ten feet (10') wide, and across which there shall be no right of access, may be required along the line of building sites abutting such a traffic artery or other incompatible use.

RESPONSE: The project does not include any through lots or parcels. This criterion is met.

(4) Lot and Parcel Side Lines. The lines of lots and parcels as far as is practicable, shall run at right angles to the street upon which they face, except that on curved streets they shall be radial to the curve.

RESPONSE: The proposed side lot lines will run at 90 degrees to the property line adjacent to Arlington Street; however, the existing property line at the right-of-way does not follow the paved projection of the right-of-way. Therefore, the property lines, while perpendicular to the front property line will be at approximately 85 degrees from the curb line of the right-of-way versus a full 90 degrees. This criterion is therefore met.

17.64.040 Building lines.

If special building setback lines are to be established in a subdivision, they shall be shown on the subdivision plat or shall be included in the deed restrictions.

RESPONSE: There are no special building setback lines proposed or required. This criterion does not apply.

17.64.050 Large building sites.

In dividing tracts into large lots or parcels which at some future time are likely to be redivided, the Planning Commission may require that the blocks be of such size and shape, be so divided into building sites and contain such site restrictions as will provide for extension and opening of streets at intervals which will permit a subsequent division of any tract into lots or parcels of smaller size.

RESPONSE: **The areas of the lots proposed resemble the areas of the existing parcels. The proposed replat is to create the river buffer conservation tract and to clean up and straighten the existing parcel lines, which meander greatly. The reconfigured lots coincide with a concurrent development plan for all three lots; refer to the included site plan of the Design Review application. There is no intention of further dividing these lots as they will be fully developed as proposed; therefore, this criterion does not apply.**

STATEMENT OF USE

TRANSPORTATION SYSTEM DEVELOPMENT CHARGE (TSDC) & PARKS SYSTEM DEVELOPMENT CHARGE (PSDC)

CLACKAMAS COUNTY

THIS INFORMATION WILL BE USED TO DETERMINE THE APPROPRIATE TRANSPORTATION SYSTEM DEVELOPMENT CHARGE CATEGORY AND PARK SYSTEM DEVELOPMENT CHARGE CLASSIFICATION. PROVIDE A WRITTEN DESCRIPTION OF YOUR DEVELOPMENT OR PROJECT BELOW. IT IS IMPORTANT THAT YOU DESCRIBE IN FULL DETAIL HOW YOU WILL USE THIS STRUCTURE. (CATEGORIES USED ARE SHOWN ON THE BACK OF THIS SHEET.)

DATE		**REF. PARCEL NO.**	T 22 S, R (E) W, Section 20 Tax Lot 600, 601, 602
BUILDING PERMIT #		**BUSINESS NAME**	Seven Hills Properties LLC

OWNER / APPLICANT NAME	Baysinger Partners Architecture - Jennifer L. Rinkus		
PHONE NUMBER	503.546.1623	**FAX NUMBER**	503.546.1601
E-MAIL ADDRESS	jenniferr@baysingerpartners.com		

PROPOSED BUSINESS USE:

PLEASE EXPLAIN WHAT TYPE OF BUSINESS ACTIVITIES WILL TAKE PLACE IN THIS BUILDING. ESTIMATE THE NUMBER OF EMPLOYEES AND CUSTOMERS COMING TO THE BUSINESS EACH DAY. (INCLUDE UNITS FROM CATEGORY ON BACK, FOR EXAMPLE: SCHOOL = # STUDENTS; HOTEL/MOTEL = # ROOMS; HOSPITAL = # BEDS)

37,100 SF Building = Health Club; 25 employees

6,300 SF Pad = Quality Sit-down Restaurant; 225 tables and approx. 15 employees

2,700 SF Pad = Fast Food w/drive-through; 100 tables and 10 employees

* all employee and seating quantities are estimated

TOTAL SQUARE FOOTAGE *INCLUDE ALL LEVELS	44,100 SF

CHECK ONE OF THE FOLLOWING:

- ☐ EXISTING STRUCTURE, EXISTING TENANT (TI)
- ☐ EXISTING STRUCTURE, NEW TENANT (TI)
- ☐ ADDITION TO EXISTING STRUCTURE
- ☒ NEW STRUCTURE
- ☐ NEW STRUCTURE, SHELL ONLY

EXISTING STRUCTURES ONLY:

YEAR BUILT	N/A	☐ **IS THE BUILDING 100% VACANT?**	
PREVIOUS TENANT'S NAME	N/A	**DATE PREVIOUS TENANT VACATED**	N/A (Month/Year)
TYPE OF USE	N/A		

ACKNOWLEDGEMENT AND SIGNATURE

BY SUBMITTING THIS APPLICATION, I AFFIRM THAT THE INFORMATION SET FORTH IN IT IS TRUE AND COMPLETE.

SIGNATURE J L Rinkus

RETURN COMPLETED FORM TO:

Engineering: Lori Phillips, Administrative Assistant (loriphi@co.clackamas.or.us) 503-742-4331 (P) 503-742-4272 (F)
Building Codes Division – Permit Counter: 503-742-4739 (P) 503-742-4741(F)

ITE LAND USE CATEGORY	UNIT
RESIDENTIAL	
Single Family/Mobile Home	Dwelling Unit
Apartment	**Dwelling Unit**
Residential Condominium/Townhouse	Dwelling Unit
Manufactured Housing (in Park)	**Dwelling Unit**
Assisted Living	Bed
Continuing Care Retirement	**Unit**
RECREATIONAL	
CityPark	Acre
County Park	**Acre**
Campground/RV Park	Camp Site
Marina	**Berth**
Golf Course	Hole
Golf Driving Range	**Tee**
Multipurpose Recreation/Arcade	1,000 Sq. Ft. Gross Floor Area
Bowling Alley	**Lane**
Movie Theater w/out matinee	Screen
Movie Theater w/matinee	**Screen**
Multiplex Movie Theater (10+ screens)	Screen
Casino/Video Poker/Lottery	**1,000 Sq. Ft. Gross Floor Area**
Amusement/Theme Park	Acre
Soccer Complex	**Field**
Racquet/Tennis Club	Court
Health/Fitness Club	**1,000 Sq. Ft. Gross Floor Area**
Recreation/Community Center	1,000 Sq. Ft. Gross Floor Area
INSTITUTIONAL/MEDICAL	
Military Base	Employee
Elementary School (Public)	**Student**
Middle/Junior High School (Public)	Student
High School (Public)	**Student**
Private School (K - 12)	Student
Junior/Community College	**Student**
University/College	Student
Church	**1,000 Square Feet of Floor Area**
Day Care Center/Preschool	Student
Library	**1,000 Square Feet of Floor Area**
Hospital	Bed
Nursing Home	**Bed**
Clinic	1,000 Square Feet of Floor Area
COMMERCIAL/SERVICES	
Hotel/Motel	Room
Building Materials/Lumber	**1,000 Sq. Ft. Gross Floor Area**
Free-Standing Discount Superstore W/ Groceries	1,000 Sq. Ft. Gross Floor Area
Specialty Retail Center	**1,000 Sq. Ft. Gross Leasable Area**
Free-Standing Discount Store w/o Groceries	1,000 Sq. Ft. Gross Floor Area
Hardware/Paint Stores	**1,000 Sq. Ft. Gross Floor Area**
Nursery/Garden Center	1,000 Sq. Ft. Gross Floor Area
Nursery (Wholesale)	**1,000 Sq. Ft. Gross Floor Area**
Shopping Center	1,000 Sq. Ft. Gross Leasable Area
Factory Outlet Center	**1,000 Sq. Ft. Gross Floor Area**
New Car Sales	1,000 Sq. Ft. Gross Floor Area
Automobile Parts Sales	**1,000 Sq. Ft. Gross Floor Area**
Tire Superstore	1,000 Sq. Ft. Gross Floor Area
Supermarket	**1,000 Sq. Ft. Gross Floor Area**
Convenience Market (24 hour)	1,000 Sq. Ft. Gross Floor Area
Convenience Market with Fuel Pump	**Vehicle Fueling Pump**
Wholesale Market	1,000 Sq. Ft. Gross Floor Area
Discount Club	**1,000 Sq. Ft. Gross Floor Area**
Home Improvement Superstore	1,000 Sq. Ft. Gross Floor Area
Electronics Superstore	**1,000 Sq. Ft. Gross Floor Area**
Office Supply Superstore	1,000 Sq. Ft. Gross Floor Area
Apparel Store	**1,000 Sq. Ft. Gross Floor Area**
Pharmacy/Drugstore w/o Drive-Thru Window	1,000 Sq. Ft. Gross Floor Area
Pharmacy/Drugstore W/ Drive-Thru Window	**1,000 Sq. Ft. Gross Floor Area**

ITE LAND USE CATEGORY	UNIT
COMMERCIAL/SERVICES (Continued...)	
Furniture Store	1,000 Sq. Ft. Gross Floor Area
Video Rental Store	**1,000 Sq. Ft. Gross Floor Area**
Bank/Savings: Walk-in	1,000 Sq. Ft. Gross Floor Area
Bank/Savings: Drive-In	**1,000 Sq. Ft. Gross Floor Area**
Quality Restaurant (not a chain)	1,000 Sq. Ft. Gross Floor Area
High Turnover, Sit-Down Restaurant (Chain or Stand Alone)	**1,000 Sq. Ft. Gross Floor Area**
Fast Food Restaurant (No Drive-Thru)	1,000 Sq. Ft. Gross Floor Area
Fast Food Restaurant (With Drive-Thru)	**1,000 Sq. Ft. Gross Floor Area**
Drinking Place/Bar	1,000 Sq. Ft. Gross Floor Area
Quick Lubrication Vehicle Shop	**Service Stall**
Automobile Care Center	1,000 Sq. Ft. Gross Leased Area
Gasoline/Service Station (No Market or Car Wash)	**Vehicle Fueling Position**
Gasoline/Service Station (With Convenience Market)	Vehicle Fueling Position
Gasoline Service Station (W/ Convenience Market & Car Wash)	**Vehicle Fueling Position**
OFFICE	
General Office Building	1,000 Sq. Ft. Gross Floor Area
Corporate Headquarters Building	**1,000 Sq. Ft. Gross Floor Area**
Single Tenant Office Building	1,000 Sq. Ft. Gross Floor Area
Medical-Dental Office Building	**1,000 Sq. Ft. Gross Floor Area**
Government Office Building	1,000 Sq. Ft. Gross Floor Area
State Motor Vehicles Dept.	**1,000 Sq. Ft. Gross Floor Area**
U.S. Post Office	1,000 Sq. Ft. Gross Floor Area
Office Park	**1,000 Sq. Ft. Gross Floor Area**
Research and Development Center	1,000 Sq. Ft. Gross Floor Area
Business Park	**1,000 Sq. Ft. Gross Floor Area**
Light Rail Transit Station With Parking	Parking Space
General Light Industrial	**1,000 Sq. Ft. Gross Floor Area**
General Heavy Industrial	1,000 Sq. Ft. Gross Floor Area
Industrial Park	**1,000 Sq. Ft. Gross Floor Area**
Manufacturing	1,000 Sq. Ft. Gross Floor Area
Warehouse	**1,000 Sq. Ft. Gross Floor Area**
Mini-Warehouse	1,000 Sq. Ft. Gross Floor Area
Utilities	**1,000 Sq. Ft. Gross Floor Area**

Transportation Impact Analysis

Arlington Retail Development

Gladstone, Oregon

November 2015

Transportation Impact Analysis

Arlington Retail Development

Gladstone, Oregon

Prepared For:
Seven Hills Properties
88 Perry Street
San Francisco, CA 94107

Prepared By:
Kittelson & Associates, Inc.
610 SW Alder St, Suite 700
Portland, OR 97205
(503) 228-5230

Project Manager: Andrew Ooms, P.E.
Project Principal: Brian J. Dunn, P.E.

REGISTERED PROFESSIONAL ENGINEER
60027PE
OREGON
July 13, 1999
BRIAN JOSEPH DUNN
EXPIRES: 12-31-2015

Project No. 19138

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Section 1
Executive Summary

Executive Summary

Seven Hills Properties is proposing a retail development on a vacant tract of land along the south side of Arlington Street, just east of McLoughlin Boulevard (OR 99E) and east of an adjacent Walgreens development in Gladstone, Oregon. The subject site borders the north side of the Clackamas River, is approximately four acres in size, and is zoned for general commercial use. The proposed retail uses for this site consist of a 35,000 SF fitness center, a 6,300 SF high-quality sit-down restaurant, and a 2,700 SF fast food restaurant with drive through window. Primary site access will occur at a fully-directional driveway established along the site frontage of Arlington Street. Additionally, the site will have a shared internal connection with the adjacent Walgreens property, which has a driveway connection with Arlington Street and a right-in only driveway on OR 99E. Final site development and occupancy is expected in 2016.

The results of this transportation impact analysis indicate that the proposed retail development can be developed while maintaining acceptable levels of service and safety on the surrounding transportation system. The findings and recommendations of this analysis are discussed below.

FINDINGS

Existing Conditions

- The signalized McLoughlin Boulevard (OR 99E)/Arlington Street intersection currently operates at an acceptable level during the weekday a.m. and p.m. peak hours and meets the peak hour v/c ratio mobility standards enforced by the Oregon Department of Transportation.
- The two unsignalized driveway accesses to the adjacent Walgreens development along OR 99E and Arlington Street currently operate at acceptable levels during the weekday a.m. and p.m. peak hours, and meet the governing v/c ratio mobility standards of ODOT or the City of Gladstone.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.

Year 2016 Background Traffic Conditions

- The McLoughlin Boulevard (OR 99E)/Arlington Street intersection as well as the two existing driveways to the adjacent Walgreens development are forecast to continue operating at acceptable levels during the weekday a.m. and p.m. peak hours, and meet the v/c ratio mobility standards of the governing agencies under background traffic conditions without the site development.
- Vehicle queues within the northbound right-turn lane of the McLoughlin Boulevard (OR99E)/Arlington Street intersection will be accommodated within available storage and will not block the right-in OR 99E access to the Walgreens driveways during the weekday a.m. and p.m. peak hours.

- Vehicle queues within the shared left/through lane on the westbound approach of the Arlington Street/OR 99E intersection are expected to frequently affect the left-turn egress movement from the Walgreens driveway during the peak 15 minutes of the weekday a.m. and p.m. peak hours. This may result in driveway queues long enough that drivers may seek out alternative routes such as Arlington Street eastbound.

Proposed Development Plan

- The proposed site plan includes a 35,000 SF fitness center, a 6,300 SF high-quality sit-down restaurant, and a 2,700 SF fast food restaurant with drive through window.
- Primary site access will occur from a fully-directional driveway to Arlington Street approximately 215 feet east of the adjacent Walgreens driveway and approximately 255 feet west of a driveway to a small retail building just west of Clackamas Boulevard. There is an existing gated access along the site frontage of Arlington Street that will be removed.
- A shared internal connection will be made to the adjacent Walgreens site, allowing vehicles other access options; a full access to Arlington Street and a right-in only access OR 99E.
- To address vehicle queuing demand and storage needs along the westbound approach of Arlington Street at the OR 99E traffic signal, it is recommended that the lane striping delineating the shared westbound left/through and right turn lanes be extended further back from the intersection from 150 feet to 350 feet in length. This can be achieved by restricting on-street parking along the site frontage.
- The proposed site development is estimated to generate 2,495 net new trips for a typical weekday; 173 net new trips (91 inbound, 82 outbound) are projected to occur during the weekday a.m. peak hour and 194 net new trips (112 inbound, 82 outbound) are projected to occur during the weekday p.m. peak hour.

Year 2016 Total Traffic Conditions

- Under full site build-out conditions, all study intersections, including the proposed site access driveway to Arlington Street, are forecast to operate with acceptable levels during the weekday a.m. and p.m. peak hours, and meet governing v/c ratio mobility standards of ODOT and the City of Gladstone.
- Vehicle queues within the shared left/through lane on the westbound approach of the Arlington Street/OR 99E intersection are expected to frequently affect the left-turn egress movement from the Walgreens driveway during the peak 15 minutes of the weekday a.m. and p.m. peak hours. Although the influence of vehicle queues will be reduced somewhat by the proposed lane storage extensions recommended in the Proposed Development Plan section above. The same vehicle queues within the westbound left/through lane on Arlington Street are not expected to block the site access driveway to Arlington Street during the weekday a.m. and p.m. peak hours of the build-out year condition.

Site Access/Circulation Findings

- Operationally, the proposed site access to Arlington Street will function acceptably under the proposed development plan during the weekday a.m. and p.m. peak hours.
- Intersection sight distance is adequate along Arlington Street from the location of the proposed site access. Adequate intersection sight distance would be further assured if on-street parking is restricted along the site frontage.
- The turn movement needs of large trucks making deliveries to the various retail buildings will be accommodated by the proposed site plan, including at all external points of access and internal drive aisles.

RECOMMENDATIONS

- Construct a fully-direction site access driveway to Arlington Street, approximately 215 feet east of the adjacent Walgreens driveway. Establish stop-control on the driveway approach to the street.
- Remove the existing gated access along the eastern site frontage of Arlington Street.
- Create a shared internal connection with the adjacent Walgreens site, allowing vehicles to use other access options, including the full access driveway to Arlington Street and a right-in only access to OR 99E.
- Extend the lane striping delineating the shared left/through and right turn lanes on the westbound approach of the Arlington Street/OR 99E intersection from 150 feet to 350 feet in length.
- Restrict on-street parking along the site frontage of Arlington Street to ensure adequate and continuous intersection sight distance, and sufficient pavement width to develop longer storage lanes on the approach to the adjacent highway signal.

Additional details of the study methodology, findings, and recommendations are provided within this report.

Section 2
Introduction

Introduction

PROJECT DESCRIPTION

Seven Hills Properties is proposing a retail development on the south side of Arlington Street, north of the Clackamas River, and just east of McLoughlin Boulevard (OR 99E) and a Walgreens development in Gladstone, Oregon. It approximately four acres in size and is zoned for general commercial use. Figure 1 illustrates the site vicinity map and Figure 2 shows the proposed site plan, which consists of a 35,000 SF fitness center, a 6,300 SF high-quality sit-down restaurant, and a 2,700 SF fast food restaurant with drive through window. Final site development and occupancy is expected in 2016.

The results of this transportation impact analysis indicate that the proposed retail development can be developed while maintaining acceptable levels of service and safety on the surrounding transportation system. The findings and recommendations of this analysis are discussed below.

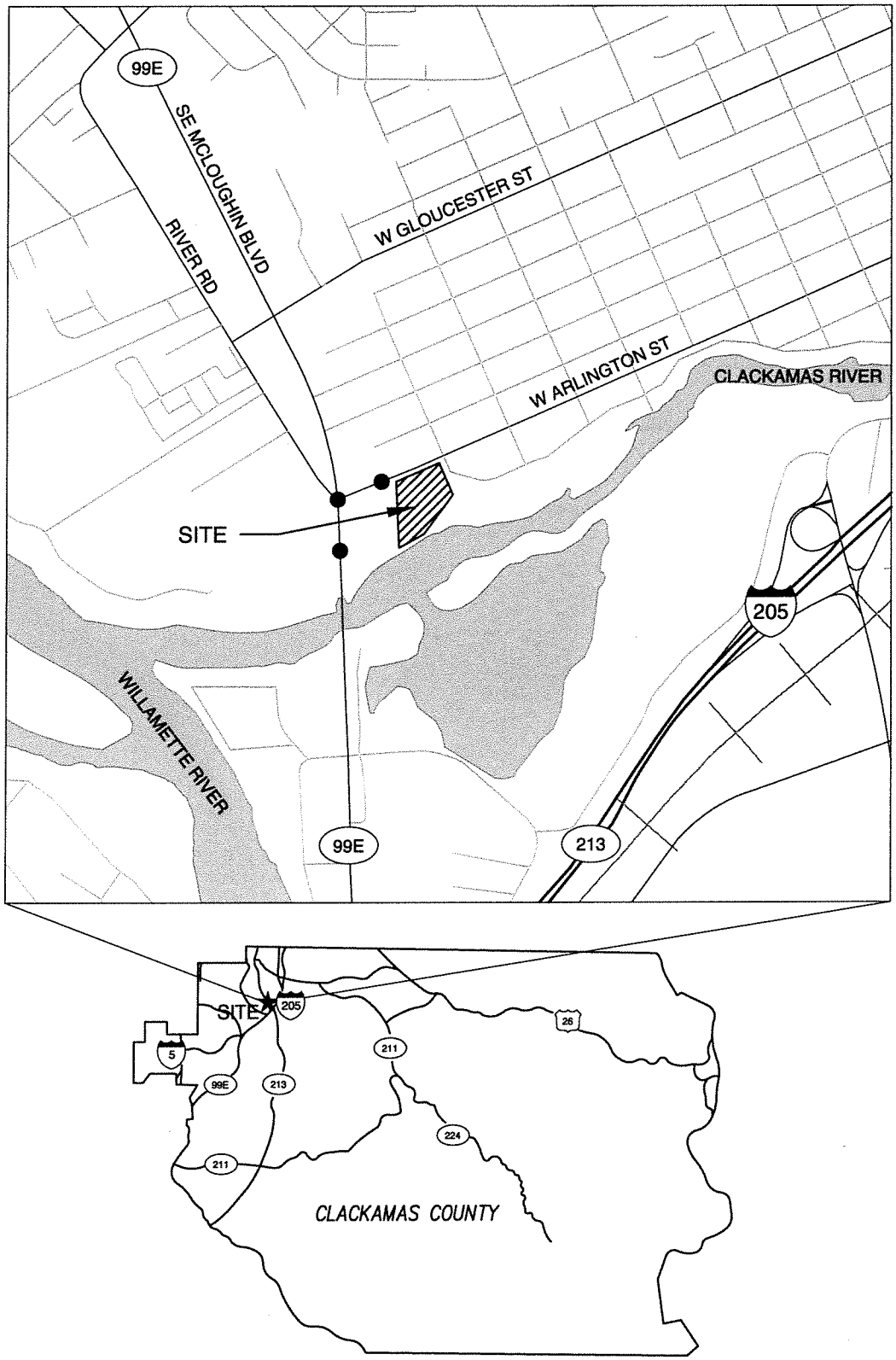
SCOPE OF THE REPORT

This analysis determines the transportation-related impacts associated with the proposed retail development and was prepared in accordance with Oregon Department of Transportation's (ODOT) transportation standards and policies. The study intersections and scope of this project were identified through discussions with Gladstone city staff at a June 2015 pre-application conference. The operational analyses were performed at these intersections:

- McLoughlin Boulevard (OR 99E)/Walgreens Driveway (right-in);
- McLoughlin Boulevard (OR99E)/Arlington Street-River Road (signal);
- Arlington Street/Walgreens Driveway; and,
- Arlington Street/Proposed Site Driveway.

This report evaluates the following transportation issues:

- Existing land-use and transportation-system conditions within the site vicinity during the weekday a.m. and p.m. peak hour periods;
- In-process developments, background traffic growth patterns, and planned transportation improvements in the study area;
- Forecast year 2016 background traffic conditions without site development during the weekday a.m. and p.m. peak hours;
- Trip generation and distribution estimates for the proposed retail development;
- Forecast year 2016 total traffic operations and vehicle queuing conditions during the weekday a.m. and p.m. peak hours with build-out of the site; and,
- A review of site-access, sight distance, circulation and safety.



- Study Intersections

Site Vicinity Map
Gladstone, Oregon

FIGURE
1

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Proposed Development Plan
Gladstone, Oregon

FIGURE
2

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Section 3
Existing Conditions

Existing Conditions

The existing conditions analysis identifies the site conditions and current operational and geometric characteristics of the roadways within the study area. These conditions will be compared with future conditions later in this report.

The proposed retail development site and surrounding study area was visited and inventoried in June 2015. At that time, information regarding site conditions, adjacent land uses, existing traffic operations, and transportation facilities in the study area was collected.

SITE CONDITIONS AND ADJACENT LAND USES

The proposed site is inside the city limits of Gladstone, approximately four acres in size, is currently vacant, and zoned outright for the proposed retail uses. Immediately surrounding the site property is the Clackamas River to the south, small businesses and single family residences to the east and northeast, a Volkswagen dealership to the north, and a Walgreens development to the west along with a Blackrock coffee-bar drive-through.

TRANSPORTATION FACILITIES

Table 1 summarizes the existing transportation facilities and roadways in the study area.

Table 1 Existing Transportation Facilities and Roadway Designations

Roadway	Functional Classification[1]	Number of Lanes	Posted Speed (mph)	Sidewalks	Bicycle Lanes	On-Street Parking
McLoughlin Boulevard (OR 99E)	Arterial (District Hwy)	5 Lanes	40	Yes	Yes	No
Arlington Street	Minor Collector	2 Lanes	25	Yes	No	Partial[3]
River Road	Minor Arterial	2 Lanes	30	Yes	Partial[2]	No

[1] Per Oregon Highway Plan (OHP, Reference 1)

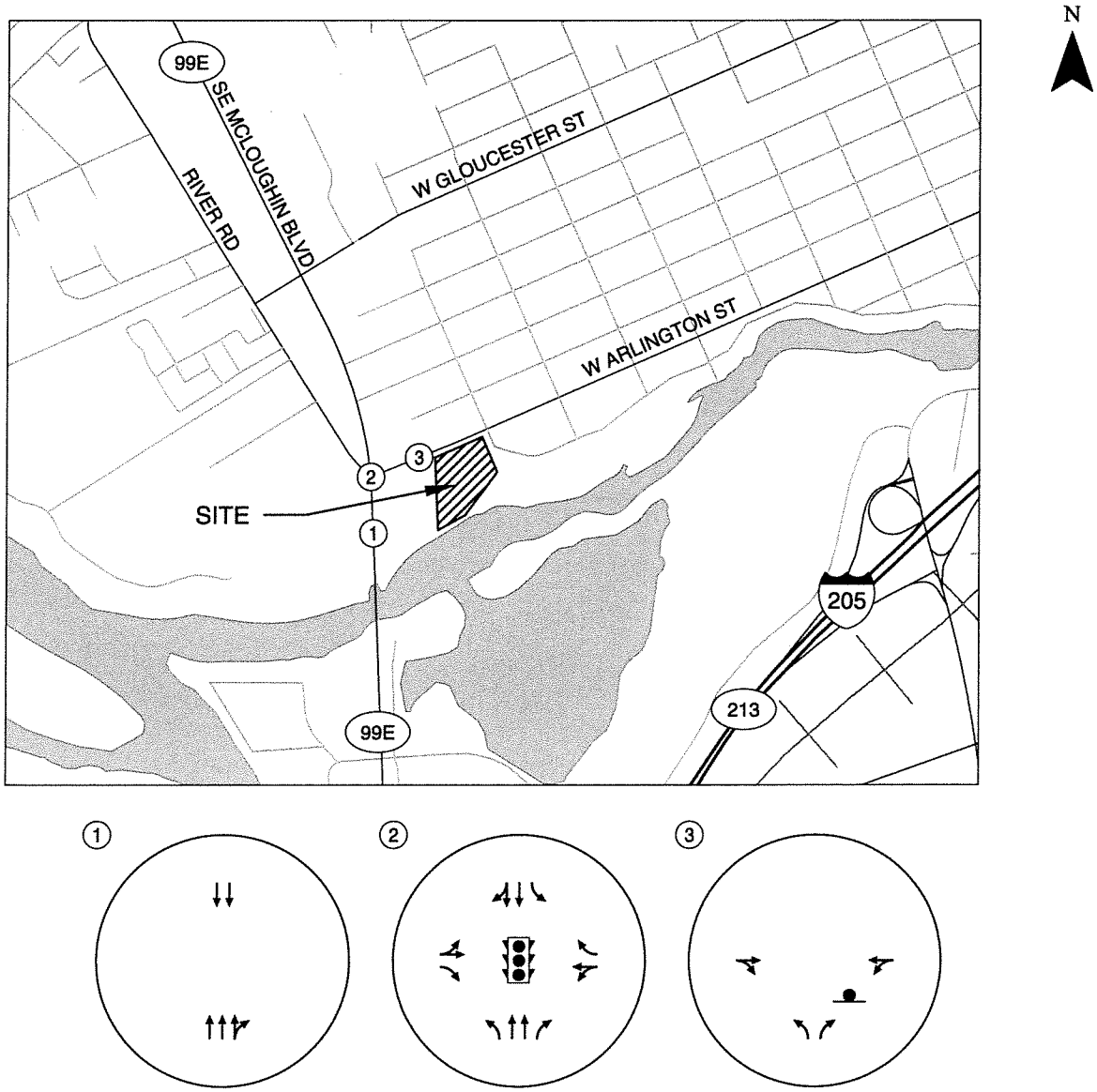
[2] Bicycle lanes are provided on the north side.

[3] On-street parking is provided on the south side of the street along the proposed site frontage.

Roadway Facilities

As indicated in Figure 1, SE McLoughlin Boulevard (OR 99E) and Arlington Street are the primary roadways serving the site. SE McLoughlin Boulevard is a five-lane roadway under the jurisdiction of the Oregon Department of Transportation (ODOT) and classified as a District Highway in the Oregon Highway Plan (OHP, Reference 1). River Road and Arlington Street are two-lane roadways and are classified by the City of Gladstone as a Minor Arterial and Minor Collector, respectively.

Figure 3 illustrates the existing lane configurations and traffic control devices in place at the identified study intersections, which include the two driveways currently accessing the adjacent Walgreens development to the west.



- STOP SIGN
- TRAFFIC SIGNAL

Existing Lane Configurations and Traffic Control Devices
Gladstone, Oregon

FIGURE 3

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Pedestrian and Bicycle Facilities

Continuous sidewalks are provided along all the roadways within the study area. Bicycle lanes are provided on both sides of McLoughlin Boulevard and along the north side of SE River Road, but there are no bike lanes along Arlington Street within the study area. Low level of bicycle activity and moderate level of pedestrian activity were observed along these facilities during the weekday p.m. peak hour.

Transit Facilities

Local transit service is provided in the area by TriMet along the following routes:

- Route 32 (Oatfield) operates north along McLoughlin Boulevard and then east along Arlington Street between the Oregon City Transit Center and the Milwaukie Town Center and Portland City Center;
- Route 33 (McLoughlin/King Road) operates north-south along McLoughlin Boulevard between the Oregon City Transit Center and the Milwaukie Town Center;
- Route 34 (Linwood/River Road) operates north along McLoughlin Boulevard and then east on Arlington Street between the Oregon City Transit Center and the Milwaukie Town Center; and,
- Route 79 (Clackamas/Oregon City) operates north along McLoughlin Boulevard and then east along Arlington Street between the Oregon City Transit Center and the Clackamas Town Center Transit Center.

A total of three bus stops are located within the study area:

- One on the east side of McLoughlin Boulevard south of the McLoughlin/Arlington intersection;
- One on the west side of McLoughlin Boulevard north of the McLoughlin/Arlington intersection; and,
- One on the north side of Arlington Street east of the McLoughlin/Arlington intersection.

TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

In June 2015, manual turning-movement counts were obtained for the McLoughlin/Arlington intersection as well as the two driveways accessing the adjacent Walgreens development during the typical mid-week peak periods in the morning (7:00 to 9:00 a.m.) and afternoon (4:00 to 6:00 p.m.). The morning and evening peak hours were found to occur between 7:20 a.m. and 8:20 a.m. and 4:55 p.m. and 5:55 p.m., respectively. Figure 4 provides a summary of the year 2015 existing turning-movement volumes for the weekday a.m. and p.m. peak hours. *Appendix "A" contains the traffic count worksheets used in this study.*

Current Levels of Service

All level-of-service analyses described in this report were performed in accordance with the procedures stated in the 2000 *Highway Capacity Manual* (Reference 2) using Synchro software. *A description of level of service and the criteria by which they are determined is presented in Appendix "B".* Appendix "B" also indicates how level of service is measured and what is generally considered the acceptable range of level of service.

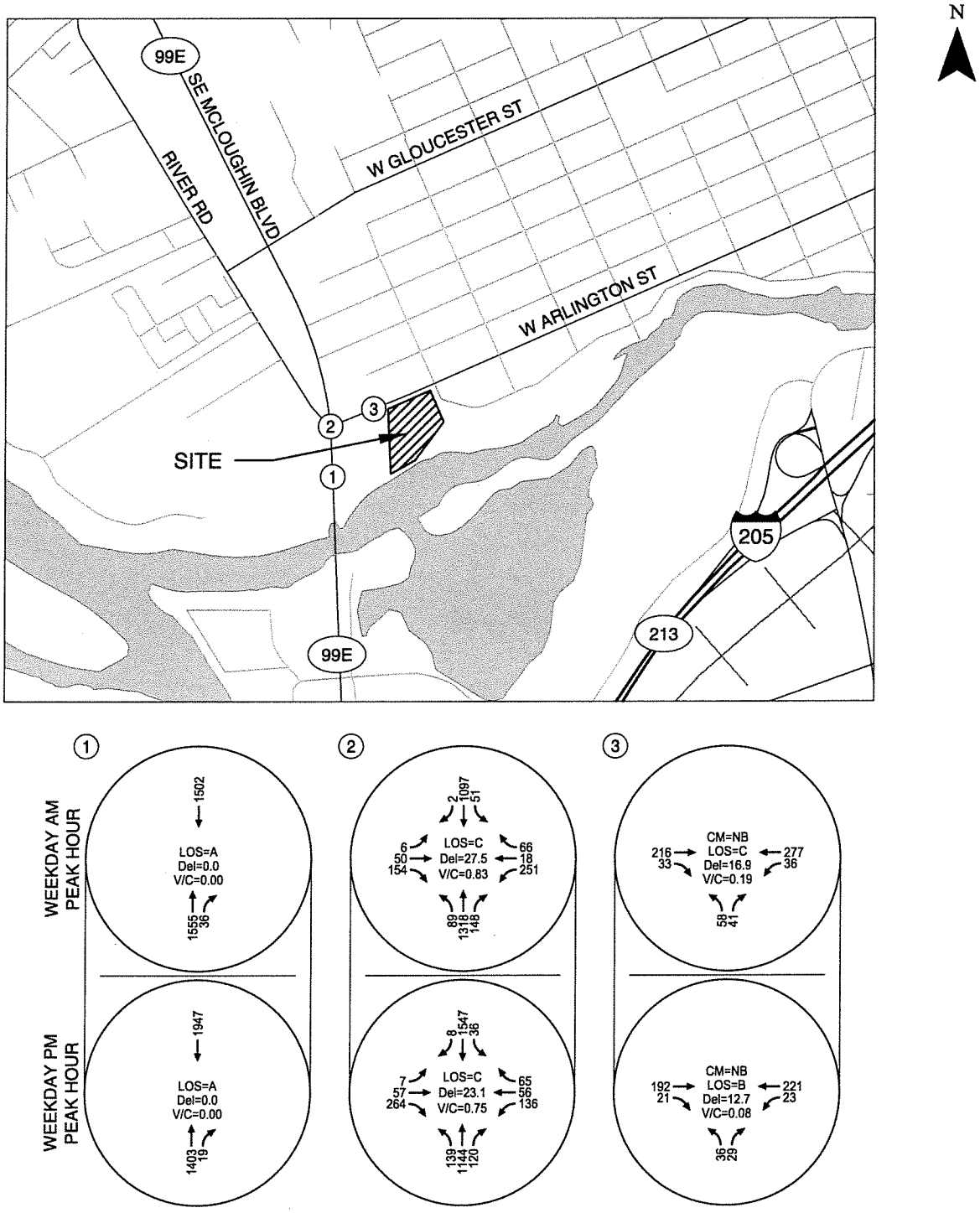
All intersection level-of-service evaluations used the peak 15-minute flow rate during the weekday a.m. and p.m. peak hours. Using the peak 15-minute flow rate ensures that this analysis is based on a reasonable worst-case scenario. For this reason, the analysis reflects conditions that are only likely to occur for 15 minutes out of each average peak hour. The transportation system will likely operate under conditions better than those described in this report during all other time periods.

Operating Standards

McLoughlin Boulevard (OR 99E) is an ODOT facility, whereby the mobility standards of the OHP apply. Based on the functional classification, posted speed, and facility location within the Portland Metro area, the OHP mobility standard for public intersections and private accesses along McLoughlin Boulevard is a volume to capacity (v/c) ratio of 0.99 or less during peak hour periods.

For the other study area roadways (Arlington Street and River Road), the City of Gladstone typically defaults to the intersection operational standards of Clackamas County, which, in turn, utilizes the standards specified in the Metro Regional Transportation Plan (RTP, Reference 3). Similar to ODOT, Metro has developed motor vehicle performance indicators that are based on v/c ratios for the 1st and/or 2nd consecutive hours, including PM 2-Hour Peak as well as a Mid-Day One-Hour Peak. For this study, the v/c ratio standard for the 1st hour of the PM 2-Hour Peak was used and reflects a v/c ratio of 0.99 or less, which matches the ODOT standard.

Figure 4 also summarizes the operations analysis for the study intersections under current weekday a.m. and p.m. peak hour traffic conditions. As shown, the McLoughlin/Arlington intersection currently operates within ODOT mobility standard during the weekday a.m. and p.m. peak hours as does the right-in only access on McLoughlin into the Walgreens development. The Walgreens driveway to Arlington Street operates at a v/c ratio well below 0.99 during the same peak hour periods, which is adequate. *Appendix "C" includes the operational outputs under year 2015 existing traffic conditions.*



CM = CRITICAL MOVEMENT (TWSC)
LOS = INTERSECTION LEVEL OF SERVICE (AWSC) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)
Del = INTERSECTION AVERAGE CONTROL DELAY (AWSC) / CRITICAL MOVEMENT CONTROL DELAY (TWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWC = TWO-WAY STOP CONTROL
AWSC= ALL-WAY STOP CONTROL

Year 2015 Existing Traffic Conditions
Weekday AM & PM Peak Hours
Gladstone, Oregon

FIGURE
4

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Traffic Safety

The crash histories of the three existing study intersections were reviewed in an effort to identify if intersection safety issues exist. Crash records were obtained from ODOT for the five-year period available from January 1, 2010 through December 31, 2014. The crash data is summarized below in Table 2. *Appendix "D" contains the detailed crash data obtained from ODOT.*

Table 2 Intersection Crash Summary (2010-2014)

Intersection	Crashes per MEV*	Number of Crashes	Type				Severity		
			Rear-End	Turning	Angle	Other	PDO	Injury	Fatality
McLoughlin Boulevard / Arlington Street- River Road	0.63	41	21	8	4	8	17	24	0
McLoughlin Boulevard/ Walgreens Driveway (right-in)	0.00	0	0	0	0	0	0	0	0
Walgreens Driveway/ Arlington Street (full access)	0.00	0	0	0	0	0	0	0	0

* MEV = Million Entering Vehicles.

Rear end crashes were the most common crash type at the McLoughlin Boulevard/Arlington Street-River Road intersection with 21 crashes out of the 41 total crashes. However, these crashes were evenly distributed with 7 southbound, 7 northbound, 6 westbound, and 1 eastbound crash. Four pedestrian crashes were also reported, with three involving pedestrians crossing with the signal indication across the south leg of the intersection. Two crashes involved westbound left-turning vehicles and one involved an eastbound right-turning vehicle.

The crash rate per million entering vehicles at the McLoughlin Boulevard/Arlington Street-River Road intersection is below the 90th percentile statewide crash rates presented in Table 4-1 of the ODOT Analysis Procedures Manual (APM, Reference 4), indicating there is no apparent safety hazard at this intersection.

No crashes were reported at the Walgreens driveways to Arlington Street and OR 99E.

Section 4
Transportation Impact Analysis

Transportation Impact Analysis

The transportation impact analysis identifies how the study area's transportation system will operate when the proposed retail development is expected to be fully completed in the year 2016. The impact of traffic generated by the proposed retail development during the weekday a.m. and p.m. peak hours was examined as follows:

- In-process developments, background traffic growth patterns, and planned transportation improvements were identified in the study area;
- Forecast year 2016 background traffic conditions were estimated without site development during the weekday a.m. and p.m. peak hours;
- Trip generation and distribution estimates were prepared for the proposed retail development;
- Forecast year 2016 total traffic operations and vehicle queuing conditions were estimated during the weekday a.m. and p.m. peak hours with build-out of the site; and,
- On-site circulation issues and site-access operations were evaluated.

YEAR 2016 BACKGROUND TRAFFIC CONDITIONS

The year 2016 background traffic analysis identifies how the study area's transportation system will operate without the proposed retail development. This analysis includes traffic attributed to planned developments and transportation improvements within the study area and to general growth in the region, but does not include traffic from the proposed development.

Planned Transportation Improvements

Based on discussions with City of Gladstone staff and a review of the *ODOT Statewide Transportation Improvement Program* (STIP, Reference 5), no transportation improvements are planned for construction in the site vicinity by 2016.

In-Process Trips

A review of land uses in the site vicinity and discussions with City of Gladstone staff revealed only one in-process development. This includes the remaining vacant retail pad on the adjacent property to the west, between the existing Walgreens and Blackrock Coffee Bar buildings. This pad is still vested by a previous land use approval, and so, for the purposes of this study, a worst-case trip generation scenario was assumed by assigning a 3,520 SF fast-food restaurant with drive-through window to this location.

Background Traffic Volumes

A future annual traffic growth rate of 0.5% was established for the study area roadways, based on discussions with Clackamas County Engineering staff and through a review of current year 2015

and historical year 2009 a.m. and p.m. peak period turn movement counts collected at the McLoughlin Boulevard/Arlington Street intersection.

Future year 2016 background traffic levels for this study were, therefore, estimated by increasing the current traffic levels at all study intersections shown in Figure 4 by 0.5% and by incorporating trips associated with the identified in-process development. The resulting year 2016 background traffic volumes for the weekday a.m. and p.m. peak hours are shown in Figure 5.

Seasonal Adjustments

It should be emphasized that McLoughlin Boulevard (OR 99E) serves the Portland Metro area as a commuter route and is not impacted by seasonal fluctuations or recreational summer traffic. Therefore, seasonal adjustment factors were not applied to baseline traffic volumes in this analysis.

Level-of-Service Analysis

The weekday a.m. and p.m. peak hour turning movement volumes shown in Figure 5 were used to conduct an operational analysis at all existing study intersections to determine year 2016 background traffic levels of service. As indicated by the respective figure, all study intersections are forecast to operate at acceptable levels (v/c ratios below 0.99) during the weekday a.m. and p.m. peak hours. *Appendix "E" contains the year 2016 background intersection operations analysis outputs.*

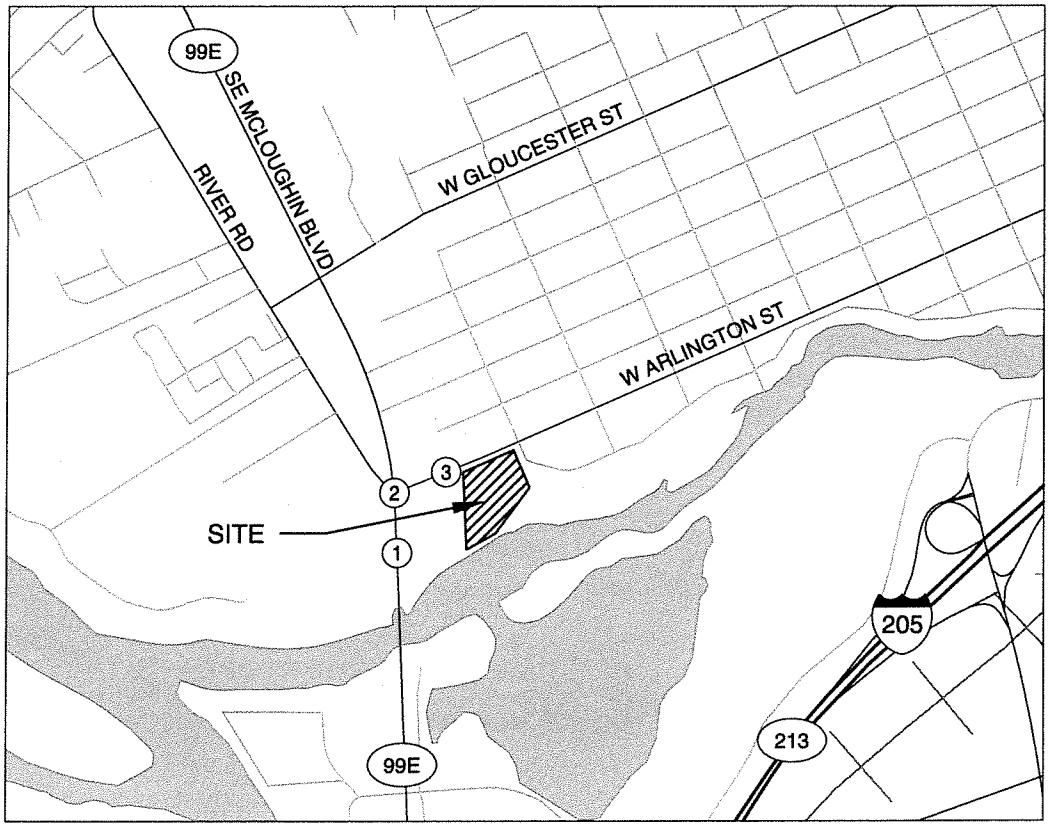
PROPOSED DEVELOPMENT PLAN

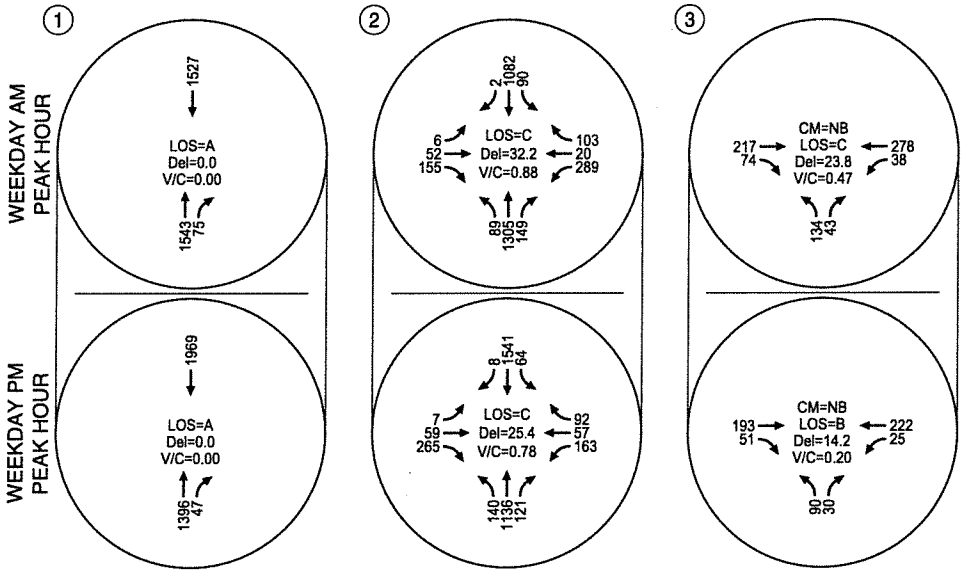
The proposed retail development plan consists of a 35,000 SF fitness center, a 6,300 SF high-quality sit-down restaurant, and a 2,700 SF fast food restaurant with drive through window. Primary access to the site will occur from a fully-directional driveway established along Arlington Street, approximately 215 feet east of the adjacent Walgreens driveway and approximately 255 feet west of a driveway to a small retail building just west of Clackamas Boulevard. The driveway will provide for one inbound lane and two outbound lanes for left- and right-turn egress movements. Additionally, the site will have a shared internal connection established with the adjacent Walgreens property, which has a driveway connection with Arlington Street and a right-in only driveway on OR 99E.

Final site development and occupancy is expected in 2016.

Trip Generation

Trip generation estimates for the proposed retail uses were developed based on observations from similar land uses, as summarized in the standard reference manual, *Trip Generation Manual, 9th Edition,* published by the Institute of Transportation Engineers (ITE, Reference 6). The trip generation estimates were adjusted to reflect *pass-by trips,* which are vehicle trips already on the adjacent roadway when they make a trip into the site. Pass-by trips do not change the traffic conditions on the overall system, but do change the turning movements at the site access point(s) and intersections adjacent to the site. Pass-by rates were obtained from the same ITE Trip Generation Manual.





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LOS = INTERSECTION LEVEL OF SERVICE (SIG) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIG) / CRITICAL MOVEMENT CONTROL DELAY (TWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWSC = TWO-WAY STOP CONTROL

Year 2016 Background Traffic Conditions Weekday AM & PM Peak Hours Gladstone, Oregon

FIGURE 5

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Site trip generation estimates were also adjusted to reflect *trip internalization* between on-site uses. For the purposes of this study, an internalization rate of only 5% was used, even though ITE's internal trip methodology between retail-centric uses would be higher. Also, a further degree of conservativeness was added by assuming no internalization of site trips with the adjacent Walgreens development.

Table 3 shows the final trip generation estimates for the proposed retail development.

Table 3 Site Trip Generation Estimates

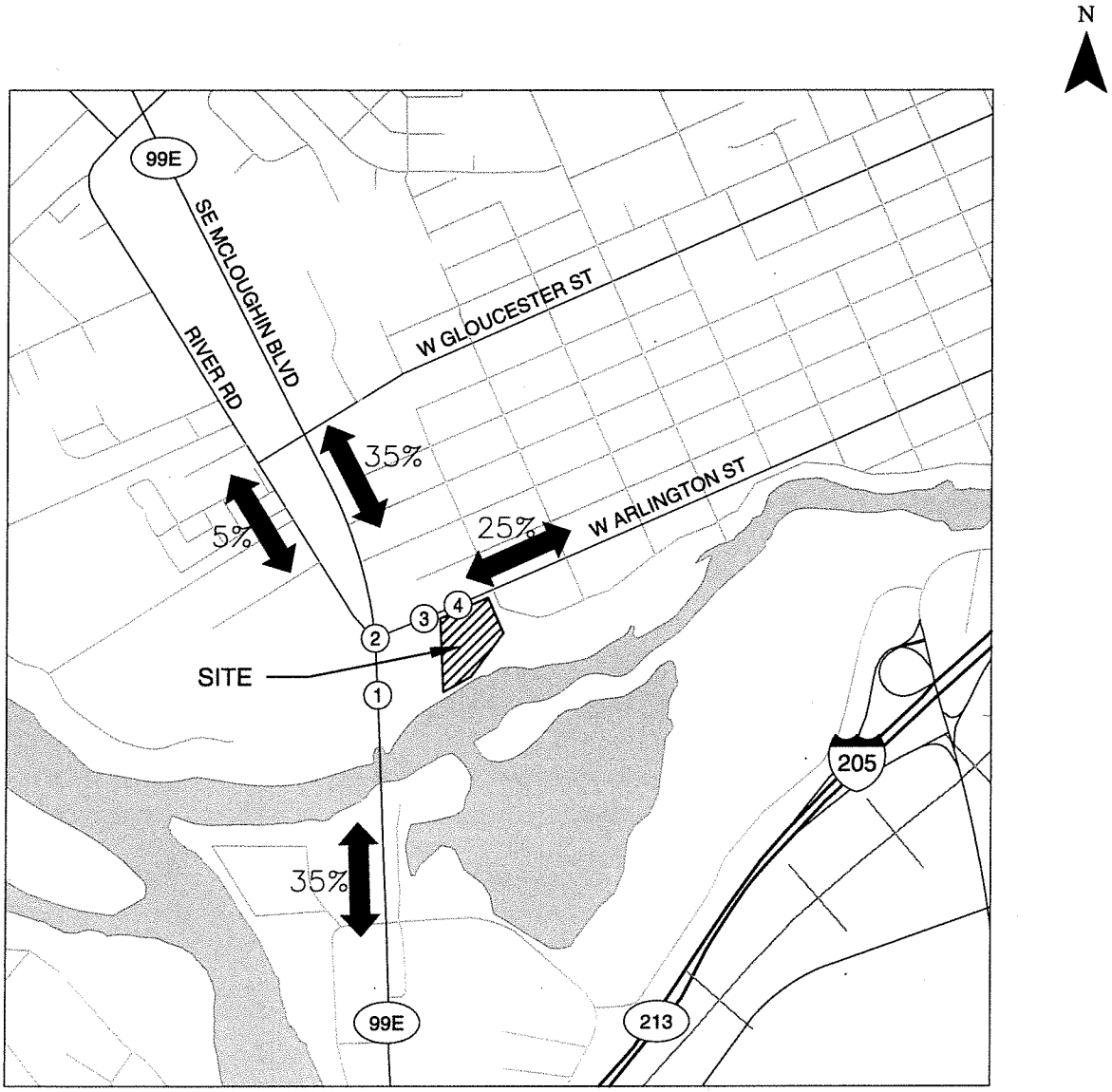
Land Use	ITE Code	Size (SF)	Daily Trips	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
Health/Fitness Club	492	35,000	1,153	49	25	24	124	70	54
Internalization (5%)			*(58)*	*(2)*	*(1)*	*(1)*	*(6)*	*(3)*	*(3)*
Fast-Food Restaurant with Drive-thru	934	2,700	1,340	123	63	60	88	46	42
Internalization (5%)			*(66)*	*(6)*	*(3)*	*(3)*	*(4)*	*(2)*	*(2)*
Pass-By (50% Daily,49% AM,50% PM)			*(636)*	*(56)*	*(28)*	*(28)*	*(42)*	*(21)*	*(21)*
High-Turnover Sit-Down Restaurant	932	6,300	802	68	37	31	62	37	25
Internalization (5%)			*(40)*	*(3)*	*(2)*	*(1)*	*(3)*	*(2)*	*(1)*
Pass-By (43% PM)			*0*	*0*	*0*	*0*	*(25)*	*(13)*	*(12)*
Total Trips			**3,295**	**240**	**125**	**115**	**274**	**153**	**121**
Total Internal Trips			**(164)**	**(11)**	**(6)**	**(5)**	**(13)**	**(7)**	**(6)**
Total Pass-by Trips			**(636)**	**(56)**	**(28)**	**(28)**	**(67)**	**(34)**	**(33)**
Net New External Trips			***2,495***	***173***	***91***	***82***	***194***	***112***	***82***

As shown in Table 3, the proposed retail development is estimated to generate 2,495 net new trips for a typical weekday; 173 net new trips (91 inbound, 82 outbound) are projected to occur during the weekday a.m. peak hour and 194 net new trips (112 inbound, 82 outbound) are projected to occur during the weekday p.m. peak hour.

Site Trip Distribution/Trip Assignment

The distribution of site-generated trips was determined based on a review of the existing transportation network, the anticipated customer base of site uses relative to the surrounding area, and the traffic count patterns observed at the McLoughlin Boulevard/Arlington Street intersection. Figure 6 illustrates the estimated trip distribution pattern for the proposed development and Figure 7 illustrates the proposed lane configurations and traffic control devices at all study intersections, including the proposed site access to Arlington Street.

The estimated site-generated trips were assigned to the surrounding street network by distributing the trips shown in Table 5 according to the trip distribution pattern shown in Figure 6, while accounting for the proposed primary site access driveway to Arlington Street and the supplemental access that is available from the adjacent Walgreens development (right-in access on OR 99E). The resulting trip assignments for the weekday a.m. and p.m. peak hours is shown in Figure 8.



Estimated Trip Distribution Pattern
Gladstone, Oregon

FIGURE
6

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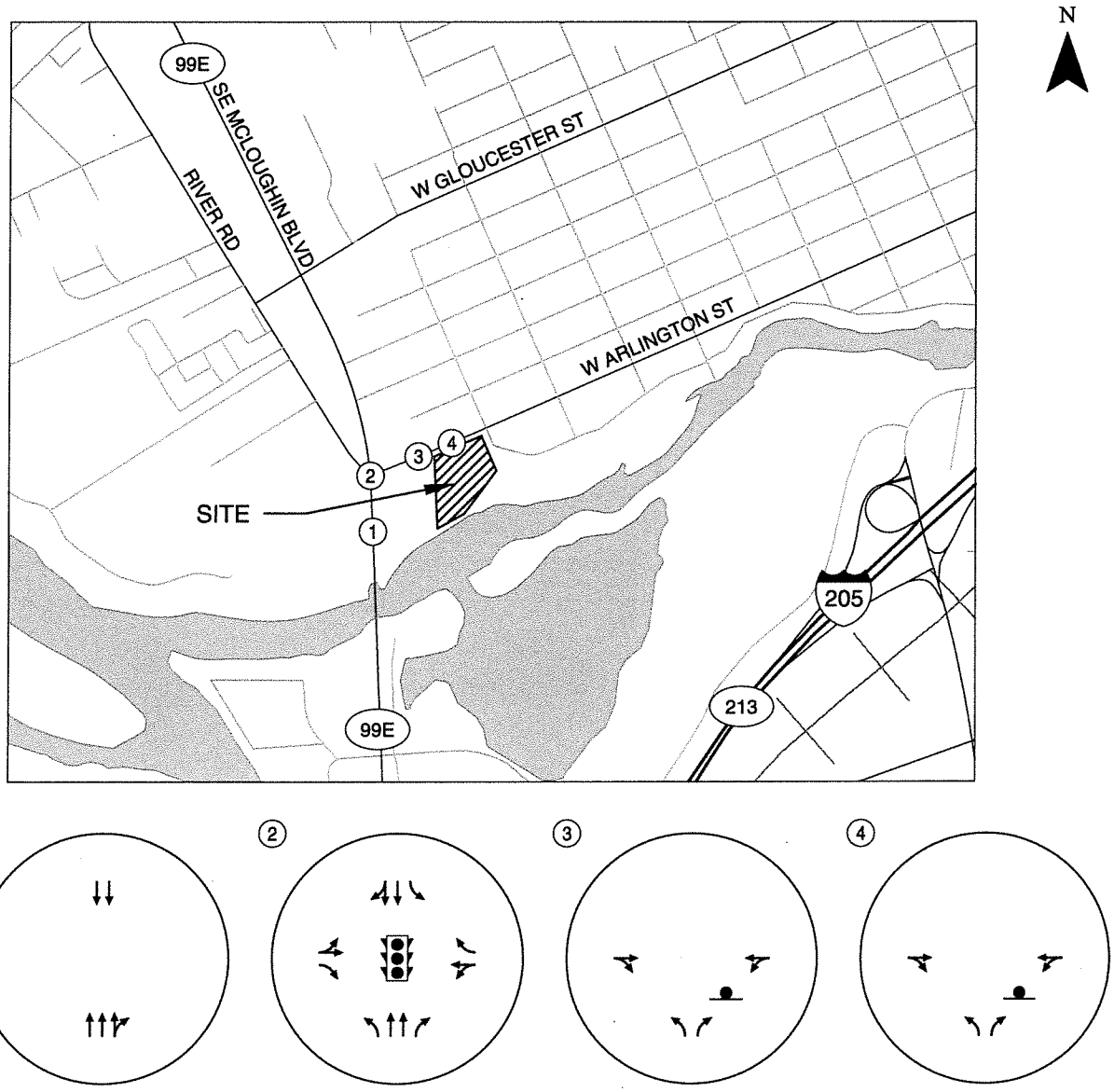

- STOP SIGN
- TRAFFIC SIGNAL

Proposed Total Lane Configurations
And Traffic Control Devices
Gladstone, Oregon

FIGURE
7

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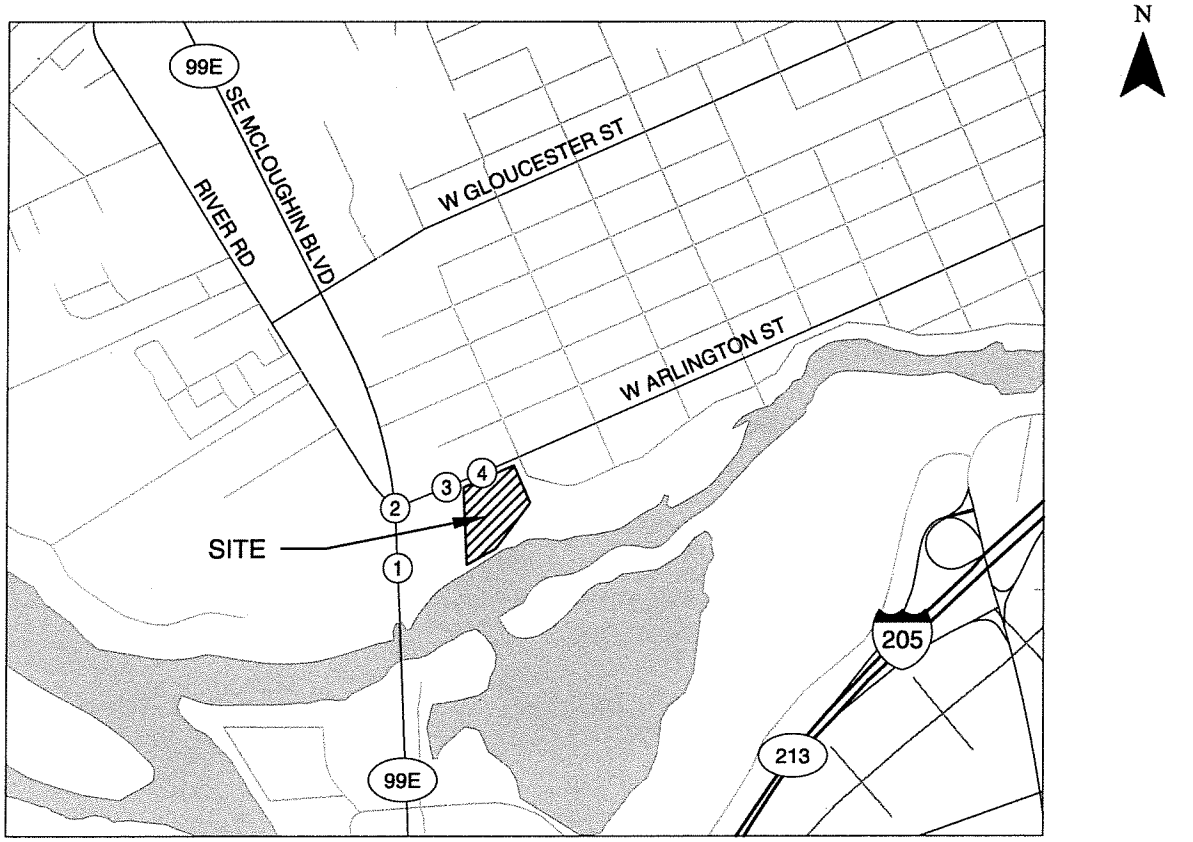
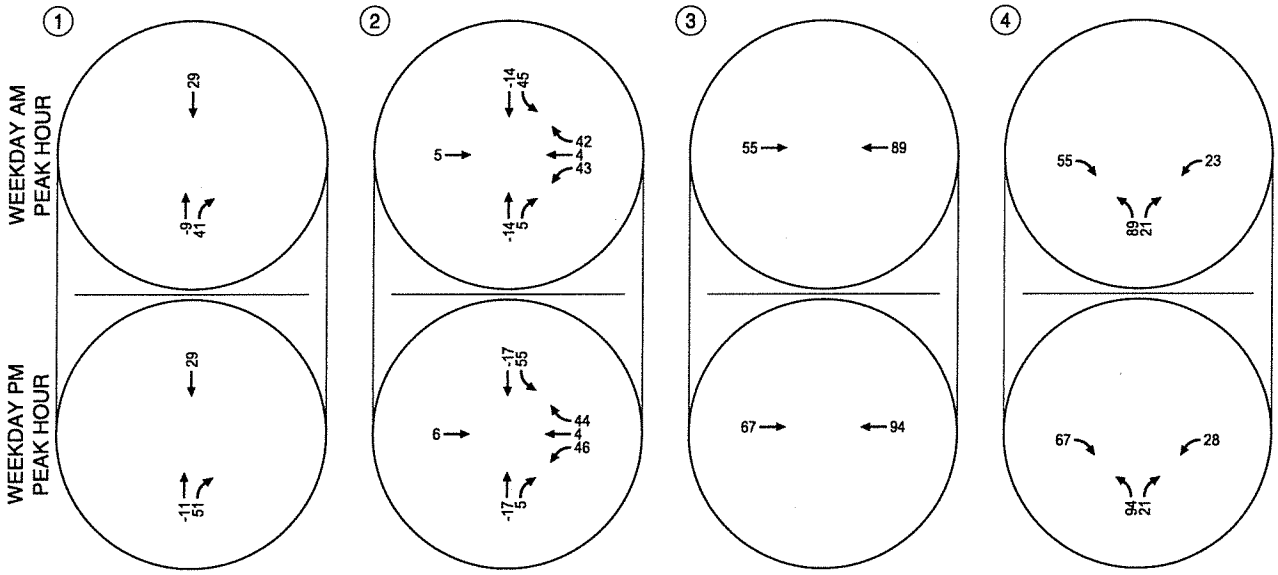




Estimated Year 2016 Site-Generated Traffic Volumes
Weekday AM and PM Peak Hours
Gladstone, Oregon

FIGURE
8

YEAR 2016 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study area's transportation system will operate with the traffic generated by the proposed retail development. The year 2016 background traffic volumes for the weekday a.m. and p.m. peak hours (shown in Figure 5) were added to the site-generated traffic (shown in Figure 8) to arrive at the total traffic volumes that are shown in Figure 9.

Level of Service Analysis

The weekday a.m. and p.m. peak hour turning movement volumes shown in Figure 9 were used to conduct an operational analysis at all existing study intersections and the proposed site access to Arlington Street to determine year 2017 total traffic levels of service. As indicated by the respective figure, all study intersections, including the proposed site access to Arlington Street are forecast to operate at acceptable levels (v/c ratios below 0.99) during the weekday a.m. and p.m. peak hours. *Appendix "F" contains the year 2016 total traffic intersection operations analysis outputs.*

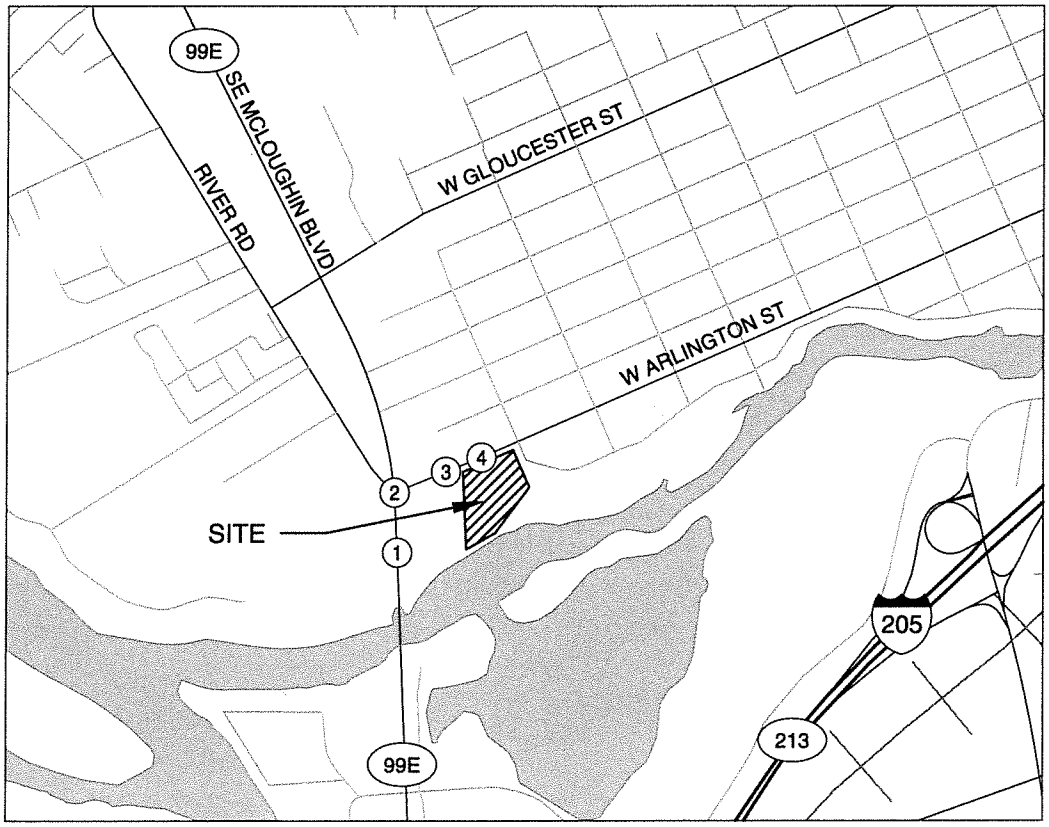
Vehicle Queue Analysis

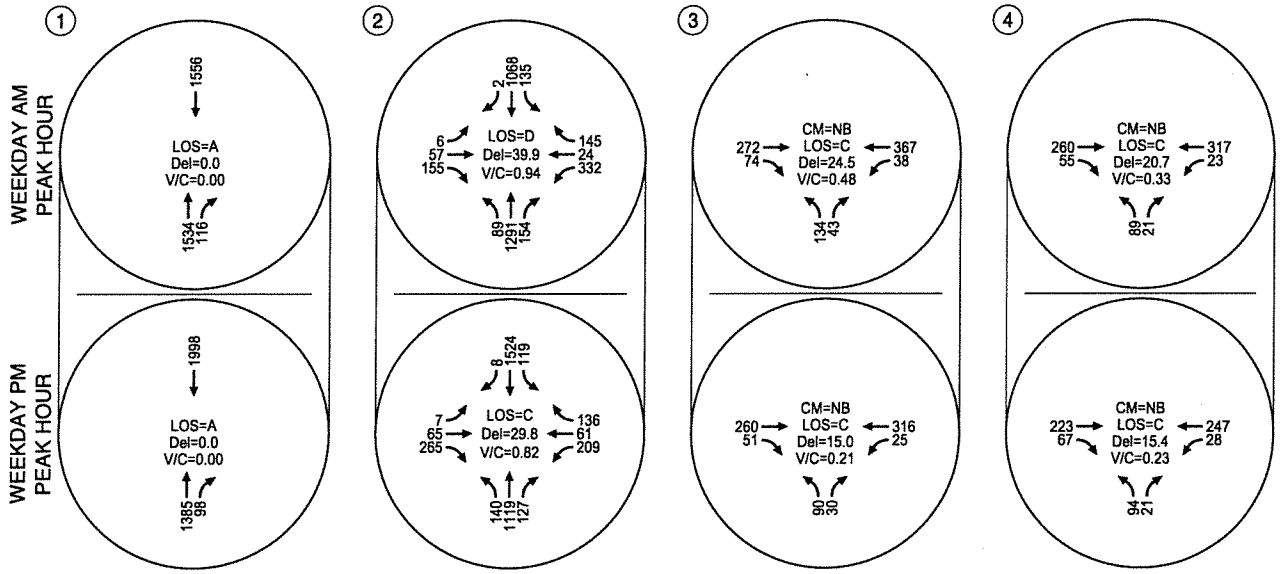
A vehicle queuing analysis was conducted to evaluate storage length impacts and needs for specific turn movements at the McLoughlin Boulevard/Arlington Street intersection. The analysis was performed for the 2016 background and total traffic conditions using the Simtraffic simulation software, with queue results averaged over a series of five distinct model runs. Table 4 summarizes the queue analysis results at the McLoughlin/Arlington intersection, specifically for the northbound right-turn lane from OR 99E as well as the shared left/through and exclusive right-turn lanes on the westbound approach of Arlington Street. Results are expressed in terms of average and 95th percentile queues during the weekday a.m. and p.m. peak hours. *The Simtraffic outputs for all queuing analyses are provided in Appendix "G".*

Table 4 Vehicle Queue Analysis Results for McLoughlin/Arlington Intersection

Approach/ Movement	Average Queue (feet)		95th Percentile Queue		Available Storage (feet)	Adequate?
	A.M. Peak	P.M. Peak	A.M. Peak	P.M. Peak		
Year 2016 Background Traffic Conditions						
NB Right	22	15	53	36	275	Yes
WB Left/Thru	**262**	**200**	**338**	**324**	150	**No**
WB Right	111	66	**217**	**168**	150	**No**
Year 2016 Total Traffic Conditions						
NB Right	25	19	58	47	275	Yes
WB Left/Thru	285	260	315	354	350*	Yes
WB Right	81	58	160	122	350*	Yes

NB = Northbound; WB = Westbound
*- Available storage distance shown reflects a proposed striping enhancement under site build-out conditions to lengthen the storage distances of the westbound shared left/through and exclusive right turn lanes from 150 feet to 350 feet.





CM = CRITICAL MOVEMENT (TWSC)
LOS = INTERSECTION LEVEL OF SERVICE (SIG) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIG) / CRITICAL MOVEMENT CONTROL DELAY (TWSC)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
TWSC = TWO-WAY STOP CONTROL

Estimated Year 2016 Total Traffic Conditions
Weekday AM and PM Peak Hours
Gladstone, Oregon

FIGURE
9

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Background Traffic Queuing Conditions

As shown in Table 4, vehicle queues within the northbound right-turn lane at the McLoughlin/Arlington intersection will be adequately accommodated by the long 275-foot storage lane. Also, queues will be short enough so as not to impact the right-in access to Walgreens.

Vehicle queues on the westbound approach are, however, forecast to exceed available storage under year 2016 background a.m. and p.m. peak hour traffic conditions. This is particularly true for the shared left/through lane where both the "average" and "95th percentile" queues extend beyond available storage. In addition, vehicle queues in this shared left/through lane are expected to frequently affect the left-turn egress movement from the Walgreens development driveway, but only during the peak 15 minutes of the weekday a.m. and p.m. peak hours. This condition may result in queues long enough that drivers from the Walgreens site may: 1) cross over into the proposed retail site to seek easier access to Arlington Street westbound, or 2) seek out alternative routes such as Arlington Street eastbound.

Total Traffic Queuing Conditions

As shown in Table 4, under year 2016 total traffic conditions, vehicle queues within the northbound right-turn lane at the McLoughlin/Arlington intersection will continue to be accommodated by the long 275-foot storage lane. Also, queues will still be short enough so as not to impact the right-in access to Walgreens.

To address the excessive vehicle queuing condition noted in the background traffic conditions section above, it is recommended that the lane striping delineating the shared left/through and right turn lanes on the westbound approach to the McLoughlin/Arlington intersection be lengthened from 150 feet to 350 feet in length. This can be achieved by restricting on-street parking along the site frontage, which is also a recommendation made in this report.

With the turn lane storage lengthened to 350 feet, vehicle queues under total traffic conditions will be no worse than the background condition, and in most instances will reduce in length. Most of this benefit will be for the westbound right-turn lane, whereby cars that were previously caught in the through-lane queue can now pass by unencumbered.

It should be emphasized again that the left-turn egress movement from the Walgreens driveway will continue to experience difficulty accessing Arlington Street in the westbound direction during the peak 15 minutes of the weekday a.m. and p.m. peak hours, even though the influence of vehicle queues on Arlington Street will be reduced somewhat by the recommended lane storage extensions.

Lastly, the projected vehicle queues within the westbound left/through and right turn lanes on Arlington Street are not expected to extend as far back as the proposed site access driveway to Arlington Street during the weekday a.m. and p.m. peak hours of the build-out year condition.

SITE ACCESS/CIRCULATION OPPORTUNITIES AND ISSUES

Site Circulation

Internal circulation was evaluated to ensure that the site provides sufficient on-site circulation for pedestrian movements and internal traffic, including delivery trucks.

Proposed Site Access Location

The proposed site driveway on Arlington Street will be a full access driveway approximately 36 feet in width, which allows for one ingress lane and two egress lanes (left- or right-turn only). The driveway will be stop-controlled for the minor approach movements with free-flow conditions maintained on Arlington Street.

The site driveway will be approximately 215 feet east of the adjacent Walgreens driveway, approximately 450 feet of the stop bar on the westbound approach to the signalized McLoughlin Boulevard/Arlington intersection, and approximately 255 feet west of a driveway to a small retail building just west of Clackamas Boulevard. Its location will also be directly across from a series of low-volume driveways accessing single family residences.

Intersection sight distance was observed in the field to be adequate at the location of the proposed site driveway. Continuity of sight distance will be ensured if the on-street parking area along the site frontage is removed as recommended.

Alternative Access from Shared Connection

The proposed retail site plan includes a shared internal connection with the adjacent Walgreens property, whereby drivers will have the ability to use a right-in only driveway from OR 99E or use another driveway connection with Arlington Street.

The right-in access along McLoughlin Boulevard to the Walgreens development is an ODOT-approved access. Use of this right-in only access should benefit both the proposed retail development and the highway as it provides a secondary access for emergency service vehicles, enhances on-site circulation for vehicles and delivery trucks, and minimizes the impacts and improves operations for northbound right-turn movements at the McLoughlin/Arlington intersection. An application to maintain this right-in access and allow for cross-connectivity with the proposed retail site will be submitted to ODOT, if required.

Section 5
Conclusions and Recommendations

Conclusions

The results of this transportation impact analysis indicate that the proposed retail development can be developed while maintaining acceptable levels of service and safety on the surrounding transportation system. The findings and recommendations of this analysis are discussed below.

FINDINGS

Existing Conditions

- The signalized McLoughlin Boulevard (OR 99E)/Arlington Street intersection currently operates at an acceptable level during the weekday a.m. and p.m. peak hours and meets the peak hour v/c ratio mobility standards enforced by the Oregon Department of Transportation.
- The two unsignalized driveway accesses to the adjacent Walgreens development along OR 99E and Arlington Street currently operate at acceptable levels during the weekday a.m. and p.m. peak hours, and meet the governing v/c ratio mobility standards of ODOT or the City of Gladstone.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.

Year 2016 Background Traffic Conditions

- The McLoughlin Boulevard (OR 99E)/Arlington Street intersection as well as the two existing driveways to the adjacent Walgreens development are forecast to continue operating at acceptable levels during the weekday a.m. and p.m. peak hours, and meet the v/c ratio mobility standards of the governing agencies under background traffic conditions without the site development.
- Vehicle queues within the northbound right-turn lane of the McLoughlin Boulevard (OR99E)/Arlington Street intersection will be accommodated within available storage and will not block the right-in OR 99E access to the Walgreens driveways during the weekday a.m. and p.m. peak hours.
- Vehicle queues within the shared left/through lane on the westbound approach of the Arlington Street/OR 99E intersection are expected to frequently affect the left-turn egress movement from the Walgreens driveway during the peak 15 minutes of the weekday a.m. and p.m. peak hours. This may result in driveway queues long enough that drivers may seek out alternative routes such as Arlington Street eastbound.

Proposed Development Plan

- The proposed site plan includes a 35,000 SF fitness center, a 6,300 SF high-quality sit-down restaurant, and a 2,700 SF fast food restaurant with drive through window.

- Primary site access will occur from a fully-directional driveway to Arlington Street approximately 215 feet east of the adjacent Walgreens driveway and approximately 255 feet west of a driveway to a small retail building just west of Clackamas Boulevard. There is an existing gated access along the site frontage of Arlington Street that will be removed.
- A shared internal connection will be made to the adjacent Walgreens site, allowing vehicles other access options; a full access to Arlington Street and a right-in only access OR 99E.
- To address vehicle queuing demand and storage needs along the westbound approach of Arlington Street at the OR 99E traffic signal, it is recommended that the lane striping delineating the shared westbound left/through and right turn lanes be extended further back from the intersection from 150 feet to 350 feet in length. This can be achieved by restricting on-street parking along the site frontage.
- The proposed site development is estimated to generate 2,495 net new trips for a typical weekday; 173 net new trips (91 inbound, 82 outbound) are projected to occur during the weekday a.m. peak hour and 194 net new trips (112 inbound, 82 outbound) are projected to occur during the weekday p.m. peak hour.

Year 2016 Total Traffic Conditions

- Under full site build-out conditions, all study intersections, including the proposed site access driveway to Arlington Street, are forecast to operate with acceptable levels during the weekday a.m. and p.m. peak hours, and meet governing v/c ratio mobility standards of ODOT and the City of Gladstone.
- Vehicle queues within the shared left/through lane on the westbound approach of the Arlington Street/OR 99E intersection are expected to frequently affect the left-turn egress movement from the Walgreens driveway during the peak 15 minutes of the weekday a.m. and p.m. peak hours. Although the influence of vehicle queues will be reduced somewhat by the proposed lane storage extensions recommended in the Proposed Development Plan section above. The same vehicle queues within the westbound left/through lane on Arlington Street are not expected to block the site access driveway to Arlington Street during the weekday a.m. and p.m. peak hours of the build-out year condition.

Site Access/Circulation Findings

- Operationally, the proposed site access to Arlington Street will function acceptably under the proposed development plan during the weekday a.m. and p.m. peak hours.
- Intersection sight distance is adequate along Arlington Street from the location of the proposed site access. Adequate intersection sight distance would be further assured if on-street parking is restricted along the site frontage.
- The turn movement needs of large trucks making deliveries to the various retail buildings will be accommodated by the proposed site plan, including at all external points of access and internal drive aisles.

RECOMMENDATIONS

- Construct a fully-direction site access driveway to Arlington Street, approximately 215 feet east of the adjacent Walgreens driveway. Establish stop-control on the driveway approach to the street.
- Remove the existing gated access along the eastern site frontage of Arlington Street.
- Create a shared internal connection with the adjacent Walgreens site, allowing vehicles to use other access options, including the full access driveway to Arlington Street and a right-in only access to OR 99E.
- Extend the lane striping delineating the shared left/through and right turn lanes on the westbound approach of the Arlington Street/OR 99E intersection from 150 feet to 350 feet in length.
- Restrict on-street parking along the site frontage of Arlington Street to ensure adequate and continuous intersection sight distance, and sufficient pavement width to develop longer storage lanes on the approach to the adjacent highway signal.

Section 6
References

References

1. Oregon Department of Transportation. *Oregon Highway Plan.* 1999, including all amendments through November 2014.

2. Transportation Research Board. *Highway Capacity Manual.* 2000.

3. Metro. *2035 Regional Transportation Plan.* July 2014.

4. Oregon Department of Transportation. *Analysis Procedures Manual.* Updates through November 2015.

5. State of Oregon. *Statewide Transportation Improvement Program.* 2015-2018.

6. Institute of Transportation Engineers. *Trip Generation, 9th Edition.* 2012.

Appendix A
Traffic Count Data

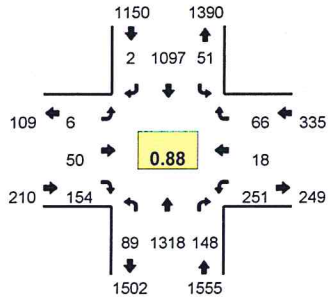
Type of peak hour being reported: System Peak

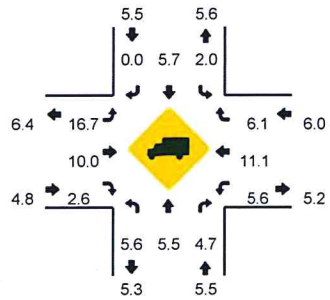
Method for determining peak hour: Total Entering Volume

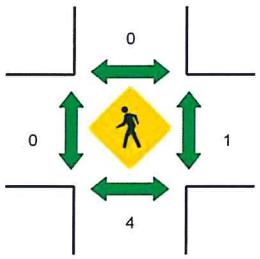
LOCATION: McLoughlin Blvd -- River Rd/Arlington St
CITY/STATE: Gladstone, OR

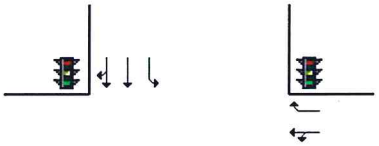
QC JOB #: 13412901
DATE: Tue, Jun 02 2015

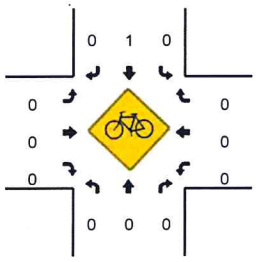
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

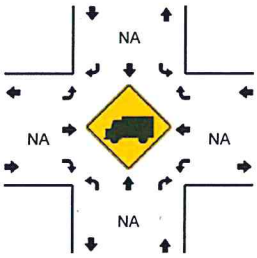


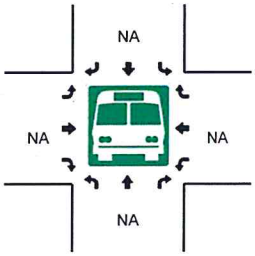












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				River Rd/Arlington St (Eastbound)				River Rd/Arlington St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	64	2	0	0	81	0	0	0	3	12	0	13	3	6	0	195	
7:05 AM	3	97	6	0	1	75	0	0	0	5	8	0	12	2	4	0	213	
7:10 AM	9	72	3	0	2	76	0	0	0	1	4	0	22	2	3	0	194	
7:15 AM	7	81	7	0	3	82	0	0	0	2	12	0	17	2	3	0	216	
7:20 AM	5	85	20	0	2	90	0	0	1	5	11	0	25	3	4	0	251	
7:25 AM	7	76	10	0	2	85	0	0	0	5	15	0	20	2	5	0	227	
7:30 AM	5	125	12	0	2	100	0	0	0	3	6	0	20	2	9	0	284	
7:35 AM	8	108	5	0	4	102	0	0	1	6	13	0	20	2	4	0	273	
7:40 AM	5	109	10	0	9	73	1	0	0	4	20	0	19	0	5	0	255	
7:45 AM	8	121	20	0	5	104	0	0	0	5	16	0	22	1	4	0	306	
7:50 AM	13	140	6	0	5	87	0	0	1	5	16	0	24	0	8	0	305	
7:55 AM	11	135	22	0	6	92	1	0	0	3	10	0	20	2	8	0	310	3029
8:00 AM	7	112	12	0	3	90	0	0	1	2	18	0	19	1	7	0	272	3106
8:05 AM	9	112	16	0	4	83	0	0	0	3	14	0	23	2	3	0	269	3162
8:10 AM	9	99	10	0	2	94	0	0	2	5	10	0	18	2	2	0	253	3221
8:15 AM	2	96	5	0	7	97	0	0	0	4	5	0	21	1	7	0	245	3250
8:20 AM	9	108	13	0	2	64	0	0	0	4	17	0	22	1	8	0	248	3247
8:25 AM	5	103	11	0	7	66	0	0	0	3	10	0	19	2	4	0	230	3250
8:30 AM	7	109	8	0	5	77	0	0	0	4	8	0	14	1	5	0	238	3204
8:35 AM	6	93	8	0	4	70	0	0	1	3	9	0	24	2	6	0	226	3157
8:40 AM	5	92	6	0	3	95	0	0	0	3	14	0	15	3	7	0	243	3145
8:45 AM	5	99	6	0	4	84	2	0	0	0	10	0	23	2	2	0	237	3076
8:50 AM	13	121	15	0	4	69	0	0	0	2	9	0	8	0	5	0	246	3017
8:55 AM	5	83	5	0	1	58	1	0	0	1	18	0	13	0	8	0	193	2900

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	128	1584	192	0	64	1132	4	0	4	52	168	0	264	12	80	0	3684
Heavy Trucks	4	68	8		0	56	0		0	0	0		8	0	12		156
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/17/2015 5:06 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

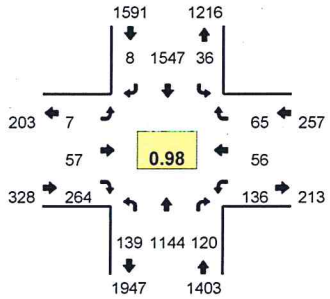
Type of peak hour being reported: System Peak

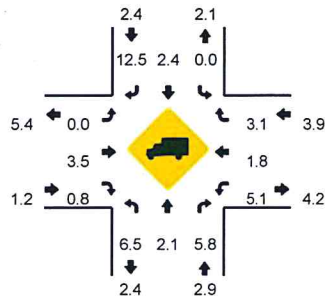
Method for determining peak hour: Total Entering Volume

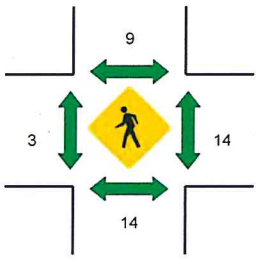
LOCATION: McLoughlin Blvd -- River Rd/Arlington St
CITY/STATE: Gladstone, OR

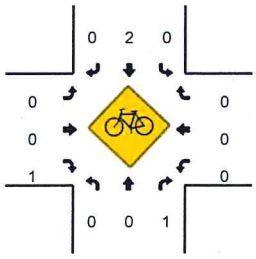
QC JOB #: 13412902
DATE: Tue, Jun 02 2015

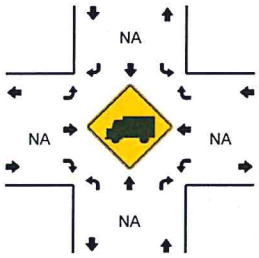
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

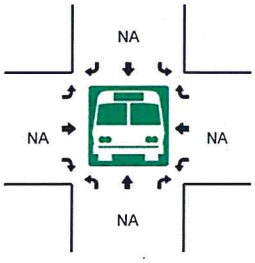












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				River Rd/Arlington St (Eastbound)				River Rd/Arlington St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	12	80	10	0	6	90	2	0	1	4	24	0	9	1	7	0	246	
4:05 PM	8	98	6	0	4	130	0	0	1	5	15	0	18	8	8	0	301	
4:10 PM	12	88	4	0	5	115	0	0	1	1	21	0	9	4	4	0	264	
4:15 PM	8	86	9	0	5	128	0	0	0	2	16	0	15	1	12	0	282	
4:20 PM	17	90	9	0	5	90	1	0	1	2	17	0	7	7	6	0	252	
4:25 PM	9	81	8	0	2	107	0	0	0	3	22	0	8	8	4	0	252	
4:30 PM	19	86	15	0	6	89	1	0	0	0	23	0	4	5	8	0	256	
4:35 PM	13	92	11	0	1	106	2	0	3	7	19	0	11	4	2	0	271	
4:40 PM	23	85	4	0	2	110	0	0	1	3	25	0	9	4	14	0	280	
4:45 PM	10	106	6	0	4	106	2	0	0	4	24	0	8	5	5	0	280	
4:50 PM	10	89	9	0	2	103	0	0	3	0	31	0	14	7	5	0	273	
4:55 PM	2	96	14	0	5	126	1	0	1	7	16	0	16	6	6	0	296	3253
5:00 PM	11	77	4	0	3	131	0	0	2	6	22	0	9	4	6	0	275	3282
5:05 PM	10	84	15	0	6	116	2	0	1	6	26	0	13	4	2	0	285	3266
5:10 PM	10	124	9	0	2	96	0	0	0	3	28	0	10	3	9	0	294	3296
5:15 PM	8	107	13	0	0	150	1	0	0	6	26	0	7	7	7	0	332	3346
5:20 PM	10	79	8	0	4	126	1	0	0	7	26	0	8	1	4	0	274	3368
5:25 PM	16	96	8	0	5	115	1	0	0	4	25	0	18	6	9	0	303	3419
5:30 PM	13	86	12	0	3	139	0	0	0	4	18	0	9	5	4	0	293	3456
5:35 PM	11	104	7	0	2	142	1	0	0	4	22	0	11	6	4	0	314	3499
5:40 PM	12	88	8	0	2	127	0	0	1	4	20	0	12	5	9	0	288	3507
5:45 PM	17	109	10	0	2	131	1	0	0	3	14	0	18	3	3	0	311	3538
5:50 PM	19	94	12	0	2	148	0	0	2	3	21	0	5	6	2	0	314	3579
5:55 PM	11	101	8	0	5	113	3	0	0	3	18	0	10	7	2	0	281	3564

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	160	1144	108	0	40	1584	8	0	0	48	260	0	152	68	68	0	3640
Heavy Trucks	8	16	0		0	48	0		0	0	4		12	0	4		92
Pedestrians		16				12				0				4			32
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/17/2015 5:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

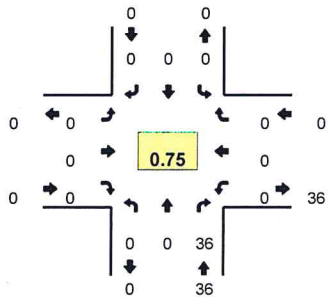
Type of peak hour being reported: System Peak

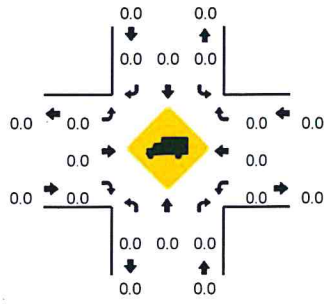
Method for determining peak hour: Total Entering Volume

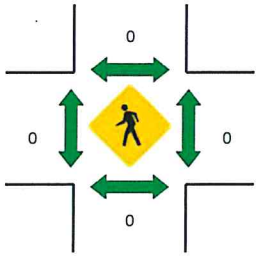
LOCATION: McLoughlin Blvd -- Walgreens Dwy
CITY/STATE: Gladstone, OR

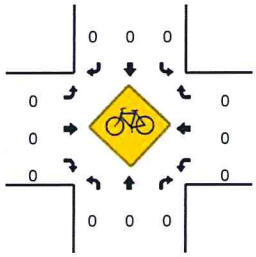
QC JOB #: 13412903
DATE: Tue, Jun 02 2015

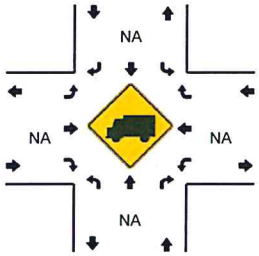
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

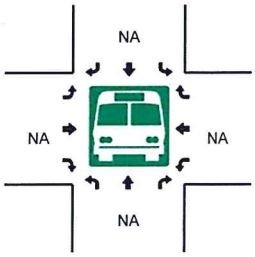












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				Walgreens Dwy (Eastbound)				Walgreens Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:05 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
7:10 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:15 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
7:20 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
7:25 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:35 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
7:40 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:45 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
7:50 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
7:55 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	37
8:00 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	38
8:05 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	36
8:10 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	38
8:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	36
8:20 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	35
8:25 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	33
8:30 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	34
8:35 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	34
8:40 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	34
8:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	33
8:50 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	33
8:55 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	35

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	48	0	0	0	0	0	0	0	0	0	0	0	0	0	48
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad Stopped Buses																	

Comments:

Report generated on 11/17/2015 5:06 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

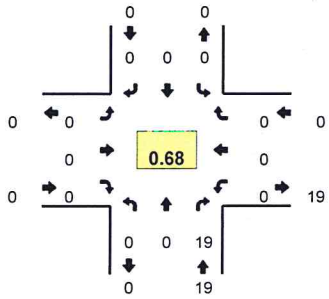
Type of peak hour being reported: System Peak

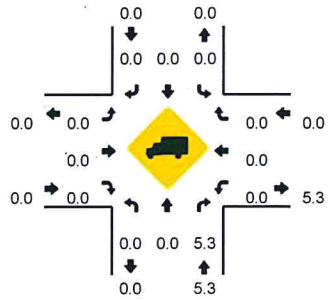
Method for determining peak hour: Total Entering Volume

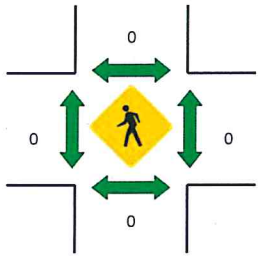
LOCATION: McLoughlin Blvd -- Walgreens Dwy
CITY/STATE: Gladstone, OR

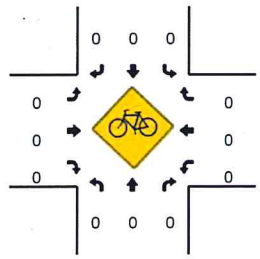
QC JOB #: 13412904
DATE: Tue, Jun 02 2015

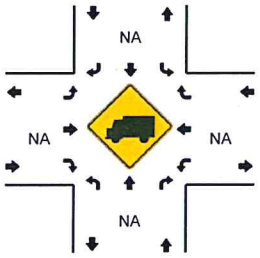
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

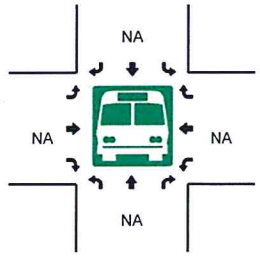












5-Min Count Period Beginning At	McLoughlin Blvd (Northbound)				McLoughlin Blvd (Southbound)				Walgreens Dwy (Eastbound)				Walgreens Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:05 PM	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
4:10 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:20 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:25 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
4:35 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
4:40 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:45 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
4:50 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
5:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	27
5:05 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	20
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
5:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	20
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
5:25 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	21
5:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	22
5:35 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	20
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
5:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	18
5:50 PM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4	19
5:55 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	22

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	28
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/17/2015 5:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

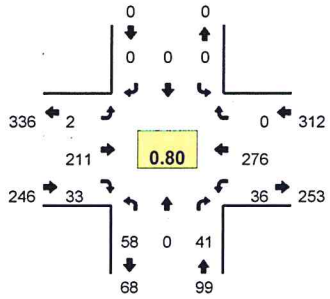
Type of peak hour being reported: System Peak

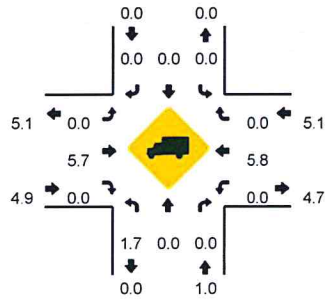
Method for determining peak hour: Total Entering Volume

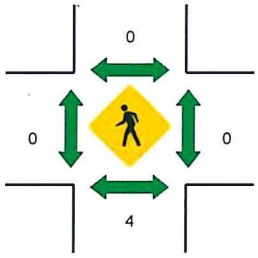
LOCATION: Walgreens Dwy -- W Arlington St
CITY/STATE: Gladstone, OR

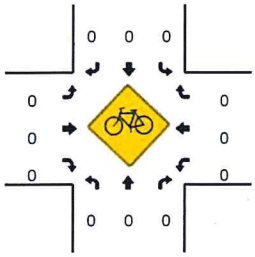
QC JOB #: 13412905
DATE: Tue, Jun 02 2015

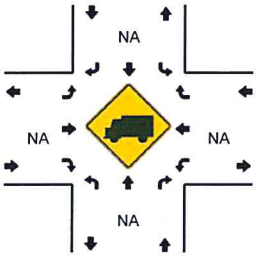
Peak-Hour: 7:20 AM -- 8:20 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

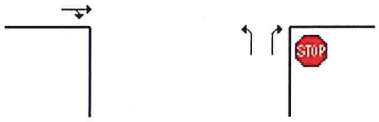


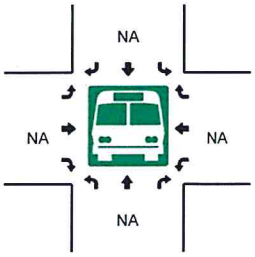












5-Min Count Period Beginning At	Walgreens Dwy (Northbound)				Walgreens Dwy (Southbound)				W Arlington St (Eastbound)				W Arlington St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	0	1	0	0	0	0	0	0	6	0	0	0	20	0	0	31	
7:05 AM	3	0	0	0	0	0	0	0	0	10	1	0	2	21	0	0	37	
7:10 AM	5	0	2	0	0	0	0	0	0	4	2	0	2	17	0	0	32	
7:15 AM	4	0	2	0	0	0	0	0	0	10	2	0	3	23	0	0	44	
7:20 AM	3	0	1	0	0	0	0	0	0	21	3	0	2	28	0	0	58	
7:25 AM	7	0	2	0	0	0	0	0	0	15	2	0	0	23	0	0	49	
7:30 AM	6	0	3	0	0	0	0	0	0	18	1	0	4	21	0	0	53	
7:35 AM	2	0	4	0	0	0	0	0	0	12	3	0	6	25	0	0	52	
7:40 AM	4	0	4	0	0	0	0	0	0	13	3	0	2	21	0	0	47	
7:45 AM	4	0	5	0	0	0	0	0	0	26	4	0	4	26	0	0	69	
7:50 AM	3	0	5	0	0	0	0	0	0	20	2	0	3	30	0	1	64	
7:55 AM	4	0	3	0	0	0	0	0	0	26	7	0	4	29	0	0	73	609
8:00 AM	8	0	3	0	0	0	0	0	0	13	1	1	3	16	0	0	45	623
8:05 AM	7	0	6	0	0	0	0	0	0	20	2	0	1	20	0	0	56	642
8:10 AM	3	0	3	0	0	0	0	0	0	13	3	0	4	17	0	0	43	653
8:15 AM	7	0	2	0	0	0	0	0	0	14	2	1	2	20	0	0	48	657
8:20 AM	4	0	2	0	0	0	0	0	0	17	3	0	2	20	0	0	48	647
8:25 AM	4	0	4	0	0	0	0	0	0	16	5	0	5	27	0	0	61	659
8:30 AM	7	0	1	0	0	0	0	0	0	11	3	0	1	18	0	0	41	647
8:35 AM	5	0	1	0	0	0	0	0	0	18	2	0	6	24	0	0	56	651
8:40 AM	5	0	4	0	0	0	0	0	0	10	3	0	1	22	0	0	45	649
8:45 AM	6	0	1	0	0	0	0	0	0	8	1	0	1	17	0	0	34	614
8:50 AM	3	0	1	0	0	0	0	0	0	18	4	0	2	17	0	0	45	595
8:55 AM	5	0	3	0	0	0	0	0	0	9	1	0	4	19	0	0	41	563

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	44	0	52	0	0	0	0	0	0	288	52	0	44	340	0	4	824
Heavy Trucks	4	0	0		0	0	0		0	8	0		0	20	0		32
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/17/2015 5:06 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

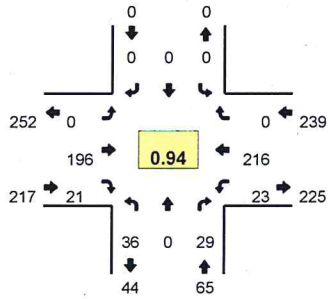
Type of peak hour being reported: System Peak

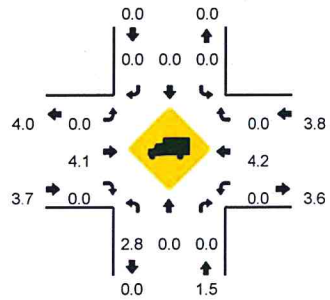
Method for determining peak hour: Total Entering Volume

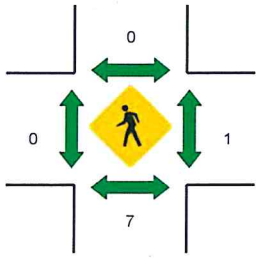
LOCATION: Walgreens Dwy -- W Arlington St
CITY/STATE: Gladstone, OR

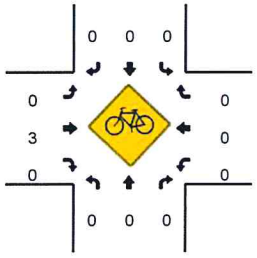
QC JOB #: 13412906
DATE: Tue, Jun 02 2015

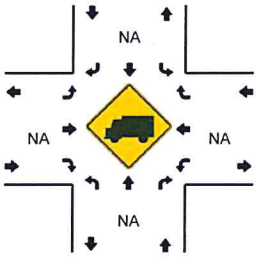
Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:25 PM -- 5:40 PM

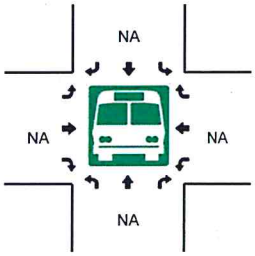












5-Min Count Period Beginning At	Walgreens Dwy (Northbound)				Walgreens Dwy (Southbound)				W Arlington St (Eastbound)				W Arlington St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	5	0	1	0	0	0	0	0	0	18	3	0	3	17	0	0	47	
4:05 PM	4	0	1	0	0	0	0	0	0	13	3	0	3	23	0	0	47	
4:10 PM	4	0	4	0	0	0	0	0	0	13	1	0	2	11	0	0	35	
4:15 PM	8	0	3	0	0	0	0	0	0	14	2	0	3	15	0	0	45	
4:20 PM	3	0	4	0	0	0	0	0	0	14	1	0	5	20	0	0	47	
4:25 PM	2	0	4	0	0	0	0	0	0	14	0	0	0	14	0	0	34	
4:30 PM	2	0	1	0	0	0	0	0	0	19	2	0	0	16	0	0	40	
4:35 PM	3	0	0	0	0	0	0	0	0	15	2	0	0	14	0	0	34	
4:40 PM	6	0	1	0	0	0	0	0	0	9	2	0	1	23	0	0	42	
4:45 PM	2	0	3	0	0	0	0	0	0	12	1	0	3	11	0	0	32	
4:50 PM	4	0	2	0	0	0	0	0	0	9	1	0	1	26	0	0	43	
4:55 PM	4	0	2	0	0	0	0	0	0	23	2	0	3	18	0	0	52	498
5:00 PM	3	0	4	0	0	0	0	0	0	11	1	0	3	17	0	0	39	490
5:05 PM	1	0	2	0	0	0	0	0	0	27	1	0	2	18	0	0	51	494
5:10 PM	4	0	3	0	0	0	0	0	0	13	1	0	2	22	0	0	45	504
5:15 PM	1	0	1	0	0	0	0	0	0	16	2	0	2	16	0	0	38	497
5:20 PM	2	0	2	0	0	0	0	0	0	16	3	0	2	16	0	0	41	491
5:25 PM	4	0	3	0	0	0	0	0	0	17	5	0	1	25	0	0	55	512
5:30 PM	3	0	5	0	0	0	0	0	0	18	1	0	1	17	0	0	45	517
5:35 PM	3	0	1	0	0	0	0	0	0	10	4	0	2	18	0	0	38	521
5:40 PM	6	0	3	0	0	0	0	0	0	14	0	0	1	17	0	0	41	520
5:45 PM	3	0	2	0	0	0	0	0	0	15	0	0	2	18	0	0	40	528
5:50 PM	2	0	1	0	0	0	0	0	0	16	1	0	2	14	0	0	36	521
5:55 PM	3	0	3	0	0	0	0	0	0	11	4	0	1	14	0	0	36	505

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	40	0	36	0	0	0	0	0	0	180	40	0	16	240	0	0	552
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	16	0		16
Pedestrians		12				0				0				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 11/17/2015 5:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B

Description of Level-of-Service Methods and Criteria

Appendix B Level-of-Service Concept

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from "A" to "F".[1]

SIGNALIZED INTERSECTIONS

The six level-of-service grades are described qualitatively for signalized intersections in Table B1. Additionally, Table B2 identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, Level of Service "D" is generally considered to represent the minimum acceptable design standard.

Table B-1 Level-of-Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

1 Most of the material in this appendix is adapted from the Transportation Research Board, Highway Capacity Manual, (2000).

Table B2 Level-of-Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

UNSIGNALIZED INTERSECTIONS

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. The 2000 Highway Capacity Manual (HCM) provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table B3. A quantitative definition of level of service for unsignalized intersections is presented in Table B4. Using this definition, Level of Service "E" is generally considered to represent the minimum acceptable design standard.

Table B3 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	• Nearly all drivers find freedom of operation. • Very seldom is there more than one vehicle in queue.
B	• Some drivers begin to consider the delay an inconvenience. • Occasionally there is more than one vehicle in queue.
C	• Many times there is more than one vehicle in queue. • Most drivers feel restricted, but not objectionably so.
D	• Often there is more than one vehicle in queue. • Drivers feel quite restricted.
E	• Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. • There is almost always more than one vehicle in queue. • Drivers find the delays approaching intolerable levels.
F	• Forced flow. • Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

Table B4 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

It should be noted that the level-of-service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less galling than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level of service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOEs) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

Appendix C

Year 2015 Existing Traffic Conditions Outputs

HCM Unsignalized Intersection Capacity Analysis
1: McLoughlin Driveway & OR 99E

11/23/2015

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	1555	36	0	1502
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	1767	41	0	1707
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						234
pX, platoon unblocked	0.72					
vC, conflicting volume	2641	609			1808	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2499	609			1808	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	18	443			345	

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	707	707	394	853	853
Volume Left	0	0	0	0	0
Volume Right	0	0	41	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.42	0.42	0.23	0.50	0.50
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
2: River Road & OR 99E

11/23/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	50	154	251	18	66	89	1318	148	51	1097	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	4.0		4.0	4.0	4.0	3.8	3.8	4.0	3.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		1.00	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1706	1544		1702	1524	1703	3406	1505	1770	3405	
Flt Permitted		0.96	1.00		0.69	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1654	1544		1236	1524	1703	3406	1505	1770	3405	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	7	57	175	285	20	75	101	1498	168	58	1247	2
RTOR Reduction (vph)	0	0	127	0	0	54	0	0	78	0	0	0
Lane Group Flow (vph)	0	64	48	0	305	21	101	1498	90	58	1249	0
Confl. Peds. (#/hr)			4	4					1	1		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	17%	10%	3%	6%	11%	6%	6%	6%	5%	2%	6%	0%
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8	8	8			2			
Actuated Green, G (s)		27.4	27.4		27.4	27.4	9.1	51.0	51.0	8.8	50.7	
Effective Green, g (s)		27.9	27.4		27.4	27.4	9.1	52.0	52.0	8.8	51.7	
Actuated g/C Ratio		0.28	0.27		0.27	0.27	0.09	0.52	0.52	0.09	0.52	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.8	4.8	4.0	4.8	
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.3	4.8	4.8	2.3	4.8	
Lane Grp Cap (vph)		461	423		339	418	155	1771	783	156	1760	
v/s Ratio Prot							0.06	c0.44		0.03	c0.37	
v/s Ratio Perm		0.04	0.03		c0.25	0.01			0.06			
v/c Ratio		0.14	0.11		0.90	0.05	0.65	0.85	0.11	0.37	0.71	
Uniform Delay, d1		27.0	27.2		35.0	26.7	43.9	20.6	12.3	43.0	18.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1	0.1		25.1	0.0	8.0	5.2	0.3	0.9	2.5	
Delay (s)		27.1	27.3		60.1	26.7	51.9	25.8	12.5	43.9	20.9	
Level of Service		C	C		E	C	D	C	B	D	C	
Approach Delay (s)		27.2			53.5			26.0			21.9	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	216	33	36	277	58	41
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	270	41	45	346	72	51
Pedestrians					4	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	302					
pX, platoon unblocked						
vC, conflicting volume			315		731	295
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			315		731	295
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		81	93
cM capacity (veh/h)			1252		374	747

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	311	391	72	51
Volume Left	0	45	72	0
Volume Right	41	0	0	51
cSH	1700	1252	374	747
Volume to Capacity	0.18	0.04	0.19	0.07
Queue Length 95th (ft)	0	3	18	6
Control Delay (s)	0.0	1.2	16.9	10.2
Lane LOS		A	C	B
Approach Delay (s)	0.0	1.2	14.1	
Approach LOS			B	

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: McLoughlin Driveway & OR 99E

11/23/2015

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑↳			↑↑
Volume (veh/h)	0	0	1403	19	0	1947
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	0	1432	19	0	1987
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						234
pX, platoon unblocked	0.67					
vC, conflicting volume	2435	487			1451	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2151	487			1451	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	28	532			473	

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	573	573	306	993	993
Volume Left	0	0	0	0	0
Volume Right	0	0	19	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.34	0.34	0.18	0.58	0.58
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	57	264	136	56	65	139	1144	120	36	1547	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	4.0		4.0	4.0	4.0	3.8	3.8	4.0	3.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.98	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00		0.97	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1823	1557		1746	1532	1703	3539	1450	1805	3534	
Flt Permitted		0.97	1.00		0.74	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1774	1557		1341	1532	1703	3539	1450	1805	3534	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	7	58	269	139	57	66	142	1167	122	37	1579	8
RTOR Reduction (vph)	0	0	172	0	0	54	0	0	39	0	0	0
Lane Group Flow (vph)	0	65	97	0	196	12	142	1167	83	37	1587	0
Confl. Peds. (#/hr)	9		14	14		9	3		14	14		3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	0%	4%	1%	5%	2%	3%	6%	2%	6%	0%	2%	12%
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8	8	8			2			
Actuated Green, G (s)		21.2	21.2		21.2	21.2	14.7	80.9	80.9	5.1	71.3	
Effective Green, g (s)		21.7	21.2		21.2	21.2	14.7	81.9	81.9	5.1	72.3	
Actuated g/C Ratio		0.18	0.18		0.18	0.18	0.12	0.68	0.68	0.04	0.60	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.8	4.8	4.0	4.8	
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.3	4.8	4.8	2.3	4.8	
Lane Grp Cap (vph)		321	275		237	271	209	2415	990	77	2129	
v/s Ratio Prot							c0.08	0.33		0.02	c0.45	
v/s Ratio Perm		0.04	0.06		c0.15	0.01			0.06			
v/c Ratio		0.20	0.35		0.83	0.04	0.68	0.48	0.08	0.48	0.75	
Uniform Delay, d1		41.8	43.4		47.6	41.0	50.4	9.0	6.4	56.2	17.2	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	0.6		20.1	0.0	7.3	0.7	0.2	2.7	2.4	
Delay (s)		42.0	43.9		67.7	41.0	57.7	9.7	6.6	58.9	19.6	
Level of Service		D	D		E	D	E	A	A	E	B	
Approach Delay (s)		43.6			61.0			14.2			20.5	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	192	21	23	221	36	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	23	25	240	39	32
Pedestrians				1	7	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	302					
pX, platoon unblocked			0.99		0.99	0.99
vC, conflicting volume			239		517	228
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			232		512	221
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		92	96
cM capacity (veh/h)			1333		505	814

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	232	265	39	32
Volume Left	0	25	39	0
Volume Right	23	0	0	32
cSH	1700	1333	505	814
Volume to Capacity	0.14	0.02	0.08	0.04
Queue Length 95th (ft)	0	1	6	3
Control Delay (s)	0.0	0.9	12.7	9.6
Lane LOS		A	B	A
Approach Delay (s)	0.0	0.9	11.3	
Approach LOS			B	

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D
Crash Data

OREGON DEPARTMENT OF TRANSPORTATI RANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - C SH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Intersectional-Related Crashes that Occurred at the McLoughlin Blvd-Arlington St-River Road
in Gladstone OR 2010-2014 (2014 Data are Preliminary and Subject to Change)

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2014														
ANGLE	0	1	0	1	0	3	0	0	1	0	1	1	0	0
FIXED / OTHER OBJECT	0	1	0	1	0	1	0	1	0	1	0	1	0	1
REAR-END	0	4	2	6	0	5	0	5	1	4	2	6	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	0	1	0
TURNING MOVEMENTS	0	4	0	4	0	5	0	3	1	4	0	4	0	0
2014 TOTAL	0	10	3	13	0	14	0	10	3	10	3	12	1	1
YEAR: 2013														
PEDESTRIAN	0	1	0	1	0	1	0	1	0	0	1	1	0	0
REAR-END	0	4	4	8	0	8	0	7	1	5	3	8	0	0
SIDESWIPE - OVERTAKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	2	0	2	0	3	0	1	1	2	0	2	0	0
2013 TOTAL	0	7	5	12	0	12	0	10	2	8	4	12	0	0
YEAR: 2012														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
HEAD-ON	0	1	0	1	0	2	0	0	1	0	1	0	0	0
REAR-END	0	1	2	3	0	3	0	1	2	3	0	2	0	0
2012 TOTAL	0	3	2	5	0	6	0	2	3	4	1	3	0	0
YEAR: 2011														
ANGLE	0	1	1	2	0	1	0	2	0	1	1	2	0	0
PEDESTRIAN	0	1	0	1	0	1	0	1	0	0	1	1	0	0
REAR-END	0	0	2	2	0	0	0	2	0	2	0	1	1	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2011 TOTAL	0	2	4	6	0	2	0	6	0	4	2	5	1	0
YEAR: 2010														
PEDESTRIAN	0	2	0	2	0	2	0	1	1	2	0	2	0	0
REAR-END	0	0	2	2	0	0	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	0	1	1	0	0
2010 TOTAL	0	2	3	5	0	2	0	4	1	4	1	5	0	0
FINAL TOTAL	0	24	17	41	0	36	0	32	9	30	11	37	2	1

Disclaimer: A higher number of crashes may be reported as of 2011 compared to prior years. This does not reflect an increase in annual crashes. The higher numbers result from a change to an internal departmental process that allows the Crash Analysis and Reporting Unit to add previously unavailable, non-fatal crash reports to the annual data file. Please be aware of this change when comparing pre-2011 crash statistics.

Intersection/Intersectional-Related Crashes at intersection of McLoughlin Blvd/Arlington St/River Rd in Gladstone, 2010-2014*
* 2014 Data are Preliminary and Subject to Change

SERIAL NO	DATE	TIME	DAY	*COUNTY OR CITY NAME	COMPNT	MLG TYP	CRASH LOCATION	COLL TYPE	EVENT	CAUSE	ERROR	SURF	TOT VEH	VEHICLE TYP/OWN #1	#2	--PEOPLE-- KILL	INJ	ALC	SPED
04034	10/10/2014	11A	FR	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 10.99	SS-O		02,32	028,052,028,(	DRY	2	011	011	0	0	N	N
00068	01/06/2012	6P	FR	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.00	HEAD		16,05	080	WET	2	011	011	0	2	N	N
04636	12/02/2012	11A	SU	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.00	REAR		07	026	WET	2	011	999	0	0	N	N
03324	09/08/2011	3P	TH	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.01	REAR		07	026	DRY	2	011	011	0	0	N	N
00135	01/13/2010	1P	WE	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	PED		02	029	WET	1	011		0	1	N	N
00676	02/26/2013	6P	TU	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	PED		18,14	055,020	DRY	1	011		0	1	Y	N
01410	04/25/2011	10P	MO	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	ANGL		04	020	DRY	2	011	011	0	1	N	N
02356	07/05/2011	7P	TU	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	ANGL		04	020	DRY	2	011	011	0	0	N	N
00904	03/19/2010	5P	FR	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	026	DRY	2	011	011	0	0	N	N
03388	09/14/2011	2P	WE	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	026	DRY	2	011	011	0	0	N	N
01424	04/17/2012	4P	TU	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	042	WET	2	011	011	0	0	N	N
01705	05/12/2012	6P	SA	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		27,07,32	016,026,052	DRY	2	011	011	0	3	N	N
00536	02/16/2013	10A	SA	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	026	DRY	2	011	011	0	2	N	N
03282	09/04/2013	12P	WE	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	026	DRY	2	019	011	0	1	N	N
04404	11/14/2013	6A	TH	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	043,026	DRY	2	011	011	0	3	N	N
00903	03/03/2014	4A	MO	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	026,043	WET	2	011	011	0	1	N	N
03092	08/09/2014	1P	SA	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		27,01,29	016,047,026	DRY	2	011	011	0	1	N	Y
03323	08/26/2014	1P	TU	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR	013	07	043,026	DRY	3	011	011	0	0	N	N
02313	06/16/2014	4P	MO	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	TURN		02	028	WET	2	011	011	0	1	N	N
02806	07/21/2014	12P	MO	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	TURN		04	003	DRY	2	011	011	0	1	N	N
01142	03/22/2014	10A	SA	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	FIX	040	08	001	DRY	1	091		0	1	N	N
00320	01/28/2010	2P	TH	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	PED		02,19	029	DRY	1	011		0	1	N	N
04407	11/19/2011	9P	SA	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	PED		02	029	DRY	1	011		0	1	N	N
01514	04/24/2012	7A	TU	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	ANGL		04	020	DRY	2	011	011	0	1	N	N
05221	12/23/2014	6A	TU	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	ANGL		04	020	WET	2	011	011	0	3	N	N
00383	02/04/2010	9A	TH	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	026	DRY	2	011	011	0	0	N	N
01355	04/22/2013	9A	MO	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	026	DRY	2	019	011	0	0	N	N
02239	06/24/2013	12P	MO	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	026	DRY	2	011	011	0	0	N	N
02505	07/13/2013	10P	SA	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	REAR		07	043,026	DRY	2	011	011	0	2	N	N
04538	11/22/2013	9A	FR	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	SS-O		14,13	003,045	DRY	2	011	011	0	0	N	N
03630	10/08/2010	9P	FR	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	TURN		02	028,004	DRY	2	011	011	0	0	N	N
01898	05/31/2013	6A	FR	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	TURN		04	020	DRY	2	011	011	0	2	N	N
04237	11/04/2013	1P	MO	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	TURN		02,27,19	055,027,016	WET	1	011		0	1	N	N
04033	10/10/2014	11A	FR	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	TURN	013	02,08	028,004	DRY	3	011	011	0	1	N	N
04705	11/20/2014	2P	TH	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.02	TURN		02,08	028,004	DRY	2	011	011	0	2	N	N
01325	04/19/2011	2P	TU	Gladstone	MN	R	HY 081, PACIFIC HIGHWAY EAST AT MP 11.03	TURN		07	026	DRY	2	011	011	0	0	N	N

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - [illegible] ANALYSIS AND REPORTING UNIT
CITY STREET LOCATIONS BY COU[illegible] - DRIVER BEHAVIOR FORMAT

Intersection/Intersectional-Related Crashes at intersection of McLoughlin Blvd/Arlington St/River Rd in Gladstone, 2010-2014*
* 2014 Data are Preliminary and Subject to Change

CLACKAMAS COUNTY

SERIAL NO	DATE	TIME	DAY	*COUNTY OR CITY NAME	CRASH LOCATION	COLL TYPE	EVENT	CAUSE	ERROR	SURF	TOTVEH	VEHICLE TYP/OWN #1	VEHICLE TYP/OWN #2	PEOPLE KILL	PEOPLE INJ	PEOPLE ALC	PEOPLE SPED
04489	11/19/2013	8A	TU	Gladstone	ARLINGTON ST AT MCLOUGHLIN BLVD	REAR		07	026	WET	2	011	011	0	0	N	N
00262	01/20/2014	4P	MO	Gladstone	ARLINGTON ST AT MCLOUGHLIN BLVD	REAR		07	026	DRY	2	999	011	0	2	N	N
01593	04/26/2014	UNK	SA	Gladstone	ARLINGTON ST AT MCLOUGHLIN BLVD	REAR		07	026	DRY	2	011	019	0	0	N	N
04655	11/17/2014	6A	MO	Gladstone	ARLINGTON ST AT MCLOUGHLIN BLVD	REAR		29	026	DRY	2	011	011	0	1	N	N
03174	08/26/2013	6A	MO	Gladstone	MCLOUGHLIN BLVD AT RIVER RD	REAR	013	07	026	DRY	3	019	019	0	0	N	N

Appendix E

Year 2016 Background
Traffic Conditions Outputs

HCM Unsignalized Intersection Capacity Analysis
1: McLoughlin Driveway & OR 99E

11/23/2015

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑↳			↑↑
Volume (veh/h)	0	0	1543	75	0	1527
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	1753	85	0	1735
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						234
pX, platoon unblocked	0.70					
vC, conflicting volume	2664	627			1839	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2520	627			1839	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	17	431			336	

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	701	701	436	868	868
Volume Left	0	0	0	0	0
Volume Right	0	0	85	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.41	0.26	0.51	0.51
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	52	155	289	20	103	89	1305	149	90	1082	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	4.0		4.0	4.0	4.0	3.8	3.8	4.0	3.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		1.00	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1707	1544		1702	1524	1703	3406	1505	1770	3405	
Flt Permitted		0.96	1.00		0.69	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1653	1544		1233	1524	1703	3406	1505	1770	3405	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	7	59	176	328	23	117	101	1483	169	102	1230	2
RTOR Reduction (vph)	0	0	121	0	0	78	0	0	86	0	0	0
Lane Group Flow (vph)	0	66	55	0	351	39	101	1483	83	102	1232	0
Confl. Peds. (#/hr)			4	4					1	1		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	17%	10%	3%	6%	11%	6%	6%	6%	5%	2%	6%	0%
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8	8	8			2			
Actuated Green, G (s)		31.4	31.4		31.4	31.4	9.1	46.6	46.6	9.2	46.7	
Effective Green, g (s)		31.9	31.4		31.4	31.4	9.1	47.6	47.6	9.2	47.7	
Actuated g/C Ratio		0.32	0.31		0.31	0.31	0.09	0.48	0.48	0.09	0.48	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.8	4.8	4.0	4.8	
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.3	4.8	4.8	2.3	4.8	
Lane Grp Cap (vph)		527	485		387	479	155	1621	716	163	1624	
v/s Ratio Prot							0.06	c0.44		0.06	c0.36	
v/s Ratio Perm		0.04	0.04		c0.28	0.03			0.05			
v/c Ratio		0.13	0.11		0.91	0.08	0.65	0.91	0.12	0.63	0.76	
Uniform Delay, d1		24.2	24.4		32.9	24.1	43.9	24.3	14.5	43.7	21.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1	0.1		24.2	0.1	8.0	9.6	0.3	5.9	3.4	
Delay (s)		24.2	24.5		57.1	24.2	51.9	33.9	14.9	49.7	24.8	
Level of Service		C	C		E	C	D	C	B	D	C	
Approach Delay (s)		24.4			48.8			33.1			26.7	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	217	74	38	278	134	43
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	271	92	48	348	168	54
Pedestrians					4	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	302					
pX, platoon unblocked						
vC, conflicting volume			368		764	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			368		764	322
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		53	93
cM capacity (veh/h)			1198		356	722

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	364	395	168	54
Volume Left	0	48	168	0
Volume Right	92	0	0	54
cSH	1700	1198	356	722
Volume to Capacity	0.21	0.04	0.47	0.07
Queue Length 95th (ft)	0	3	60	6
Control Delay (s)	0.0	1.3	23.8	10.4
Lane LOS		A	C	B
Approach Delay (s)	0.0	1.3	20.5	
Approach LOS			C	

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: McLoughlin Driveway & OR 99E

11/23/2015

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	1396	47	0	1969
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	0	1424	48	0	2009
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						234
pX, platoon unblocked	0.66					
vC, conflicting volume	2453	499			1472	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2173	499			1472	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	27	523			464	

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	570	570	333	1005	1005
Volume Left	0	0	0	0	0
Volume Right	0	0	48	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.34	0.34	0.20	0.59	0.59
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	59	265	163	57	92	140	1136	121	64	1541	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	4.0		4.0	4.0	4.0	3.8	3.8	4.0	3.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.98	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1823	1557		1741	1532	1703	3539	1450	1805	3534	
Flt Permitted		0.97	1.00		0.73	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1773	1557		1321	1532	1703	3539	1450	1805	3534	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	7	60	270	166	58	94	143	1159	123	65	1572	8
RTOR Reduction (vph)	0	0	169	0	0	76	0	0	44	0	0	0
Lane Group Flow (vph)	0	67	101	0	224	18	143	1159	79	65	1580	0
Confl. Peds. (#/hr)	9		14	14		9	3		14	14		3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	0%	4%	1%	5%	2%	3%	6%	2%	6%	0%	2%	12%
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8	8	8			2			
Actuated Green, G (s)		23.2	23.2		23.2	23.2	13.8	76.1	76.1	7.9	70.2	
Effective Green, g (s)		23.7	23.2		23.2	23.2	13.8	77.1	77.1	7.9	71.2	
Actuated g/C Ratio		0.20	0.19		0.19	0.19	0.12	0.64	0.64	0.07	0.59	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.8	4.8	4.0	4.8	
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.3	4.8	4.8	2.3	4.8	
Lane Grp Cap (vph)		350	301		255	296	196	2274	932	119	2097	
v/s Ratio Prot							c0.08	0.33		0.04	c0.45	
v/s Ratio Perm		0.04	0.07		c0.17	0.01			0.05			
v/c Ratio		0.19	0.34		0.88	0.06	0.73	0.51	0.08	0.55	0.75	
Uniform Delay, d1		40.2	41.8		47.0	39.5	51.3	11.4	8.1	54.3	17.9	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	0.5		26.9	0.1	11.6	0.8	0.2	3.5	2.6	
Delay (s)		40.4	42.2		73.9	39.6	62.9	12.2	8.3	57.8	20.5	
Level of Service		D	D		E	D	E	B	A	E	C	
Approach Delay (s)		41.9			63.8			17.0			22.0	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	193	51	25	222	90	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	210	55	27	241	98	33
Pedestrians				1	7	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	302					
pX, platoon unblocked			0.99		0.99	0.99
vC, conflicting volume			272		540	246
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			265		534	238
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		80	96
cM capacity (veh/h)			1295		488	796

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	265	268	98	33
Volume Left	0	27	98	0
Volume Right	55	0	0	33
cSH	1700	1295	488	796
Volume to Capacity	0.16	0.02	0.20	0.04
Queue Length 95th (ft)	0	2	19	3
Control Delay (s)	0.0	1.0	14.2	9.7
Lane LOS		A	B	A
Approach Delay (s)	0.0	1.0	13.1	
Approach LOS			B	

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F

Year 2016 Total Traffic Conditions Outputs

HCM Unsignalized Intersection Capacity Analysis
1: McLoughlin Driveway & OR 99E

11/23/2015

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	1534	116	0	1556
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	1743	132	0	1768
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						234
pX, platoon unblocked	0.72					
vC, conflicting volume	2693	647			1875	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2575	647			1875	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	16	418			325	

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	697	697	480	884	884
Volume Left	0	0	0	0	0
Volume Right	0	0	132	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.41	0.28	0.52	0.52
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
2: River Road & OR 99E

11/23/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	57	155	332	24	145	89	1291	154	135	1068	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	4.0		4.0	4.0	4.0	3.8	3.8	4.0	3.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98		1.00	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1708	1544		1702	1524	1703	3406	1505	1770	3405	
Flt Permitted		0.96	1.00		0.69	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1651	1544		1226	1524	1703	3406	1505	1770	3405	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	7	65	176	377	27	165	101	1467	175	153	1214	2
RTOR Reduction (vph)	0	0	126	0	0	118	0	0	92	0	0	0
Lane Group Flow (vph)	0	72	50	0	404	47	101	1467	83	153	1216	0
Confl. Peds. (#/hr)			4	4					1	1		
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	17%	10%	3%	6%	11%	6%	6%	6%	5%	2%	6%	0%
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8	8	8			2			
Actuated Green, G (s)		28.6	28.6		28.6	28.6	9.1	45.8	45.8	12.8	49.5	
Effective Green, g (s)		29.1	28.6		28.6	28.6	9.1	46.8	46.8	12.8	50.5	
Actuated g/C Ratio		0.29	0.29		0.29	0.29	0.09	0.47	0.47	0.13	0.50	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.8	4.8	4.0	4.8	
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.3	4.8	4.8	2.3	4.8	
Lane Grp Cap (vph)		480	442		351	436	155	1594	704	227	1720	
v/s Ratio Prot							0.06	c0.43		0.09	c0.36	
v/s Ratio Perm		0.04	0.03		c0.33	0.03			0.06			
v/c Ratio		0.15	0.11		1.15	0.11	0.65	0.92	0.12	0.67	0.71	
Uniform Delay, d1		26.3	26.3		35.7	26.3	43.9	24.9	15.0	41.6	19.1	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1	0.1		95.7	0.1	8.0	10.2	0.3	6.6	2.5	
Delay (s)		26.4	26.4		131.4	26.4	51.9	35.0	15.3	48.2	21.5	
Level of Service		C	C		F	C	D	D	B	D	C	
Approach Delay (s)		26.4			100.9			34.0			24.5	
Approach LOS		C			F			C			C	

Intersection Summary			
HCM Average Control Delay	39.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	7.8
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	272	74	38	367	134	43
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	340	92	48	459	168	54
Pedestrians					4	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	302					
pX, platoon unblocked						
vC, conflicting volume			436		715	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			436		715	390
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		52	91
cM capacity (veh/h)			1130		349	612

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	432	200	306	168	54
Volume Left	0	48	0	168	0
Volume Right	92	0	0	0	54
cSH	1700	1130	1700	349	612
Volume to Capacity	0.25	0.04	0.18	0.48	0.09
Queue Length 95th (ft)	0	3	0	62	7
Control Delay (s)	0.0	2.3	0.0	24.5	11.4
Lane LOS		A		C	B
Approach Delay (s)	0.0	0.9		21.3	
Approach LOS				C	

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	260	55	23	317	89	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	325	69	29	396	111	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	489					
pX, platoon unblocked						
vC, conflicting volume			394		813	359
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			394		813	359
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		67	96
cM capacity (veh/h)			1165		339	685

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	394	425	111	26
Volume Left	0	29	111	0
Volume Right	69	0	0	26
cSH	1700	1165	339	685
Volume to Capacity	0.23	0.02	0.33	0.04
Queue Length 95th (ft)	0	2	35	3
Control Delay (s)	0.0	0.8	20.7	10.5
Lane LOS		A	C	B
Approach Delay (s)	0.0	0.8	18.7	
Approach LOS			C	

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: McLoughlin Driveway & OR 99E

11/23/2015

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	1385	98	0	1998
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	0	1413	100	0	2039
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						234
pX, platoon unblocked	0.64					
vC, conflicting volume	2483	521			1513	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2192	521			1513	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	25	505			448	

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	565	565	383	1019	1019
Volume Left	0	0	0	0	0
Volume Right	0	0	100	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.33	0.33	0.23	0.60	0.60
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	65	265	209	61	136	140	1119	127	119	1524	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	4.0		4.0	4.0	4.0	3.8	3.8	4.0	3.8	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.98	1.00	1.00	0.95	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		0.99	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1824	1557		1736	1532	1703	3539	1450	1805	3534	
Flt Permitted		0.97	1.00		0.72	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1775	1557		1292	1532	1703	3539	1450	1805	3534	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	7	66	270	213	62	139	143	1142	130	121	1555	8
RTOR Reduction (vph)	0	0	161	0	0	106	0	0	56	0	0	0
Lane Group Flow (vph)	0	73	109	0	275	33	143	1142	74	121	1563	0
Confl. Peds. (#/hr)	9		14	14		9	3		14	14		3
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	0%	4%	1%	5%	2%	3%	6%	2%	6%	0%	2%	12%
Turn Type	Perm		Perm	Perm		Perm	Prot		Perm	Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8	8	8			2			
Actuated Green, G (s)		28.1	28.1		28.1	28.1	13.1	67.3	67.3	11.8	66.0	
Effective Green, g (s)		28.6	28.1		28.1	28.1	13.1	68.3	68.3	11.8	67.0	
Actuated g/C Ratio		0.24	0.23		0.23	0.23	0.11	0.57	0.57	0.10	0.56	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.8	4.8	4.0	4.8	
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.3	4.8	4.8	2.3	4.8	
Lane Grp Cap (vph)		423	365		303	359	186	2014	825	177	1973	
v/s Ratio Prot							c0.08	0.32		0.07	c0.44	
v/s Ratio Perm		0.04	0.07		c0.21	0.02			0.05			
v/c Ratio		0.17	0.30		0.91	0.09	0.77	0.57	0.09	0.68	0.79	
Uniform Delay, d1		36.3	37.8		44.7	36.0	52.0	16.4	11.7	52.3	21.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1	0.3		28.9	0.1	16.2	1.2	0.2	9.1	3.4	
Delay (s)		36.4	38.2		73.6	36.0	68.2	17.6	12.0	61.4	24.3	
Level of Service		D	D		E	D	E	B	B	E	C	
Approach Delay (s)		37.8			61.0			22.2			27.0	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	260	51	25	316	90	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	283	55	27	343	98	33
Pedestrians				1	7	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				4.0	4.0	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	302					
pX, platoon unblocked			0.99		0.99	0.99
vC, conflicting volume			345		543	318
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			332		533	305
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		79	95
cM capacity (veh/h)			1218		456	684

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	338	142	229	98	33
Volume Left	0	27	0	98	0
Volume Right	55	0	0	0	33
cSH	1700	1218	1700	456	684
Volume to Capacity	0.20	0.02	0.13	0.21	0.05
Queue Length 95th (ft)	0	2	0	20	4
Control Delay (s)	0.0	1.7	0.0	15.0	10.5
Lane LOS		A		C	B
Approach Delay (s)	0.0	0.6		13.9	
Approach LOS				B	

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	223	67	28	247	94	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	242	73	30	268	102	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	508					
pX, platoon unblocked						
vC, conflicting volume			315		608	279
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			315		608	279
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		77	97
cM capacity (veh/h)			1245		448	760

Direction, Lane #	EB 1	WB 1	NB 1	NB 2
Volume Total	315	299	102	23
Volume Left	0	30	102	0
Volume Right	73	0	0	23
cSH	1700	1245	448	760
Volume to Capacity	0.19	0.02	0.23	0.03
Queue Length 95th (ft)	0	2	22	2
Control Delay (s)	0.0	1.0	15.4	9.9
Lane LOS		A	C	A
Approach Delay (s)	0.0	1.0	14.4	
Approach LOS			B	

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix G

Vehicle Queuing Conditions Outputs

Intersection: 1: McLoughlin Driveway & OR 99E

Movement	NB	NB	NB	SB
Directions Served	T	T	TR	T
Maximum Queue (ft)	524	543	225	11
Average Queue (ft)	146	152	17	0
95th Queue (ft)	420	432	114	8
Link Distance (ft)	616	616		185
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	0	0		
Storage Bay Dist (ft)			200	
Storage Blk Time (%)		5	0	
Queuing Penalty (veh)		30	0	

Intersection: 2: River Road & OR 99E

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	98	121	313	175	174	275	265	80	184	334	362
Average Queue (ft)	35	43	262	111	90	229	233	22	74	188	211
95th Queue (ft)	82	92	338	217	172	298	294	53	143	312	332
Link Distance (ft)	274	274	212			185	185	185	701	701	701
Upstream Blk Time (%)			45		0	20	23				
Queuing Penalty (veh)			190		0	107	120				
Storage Bay Dist (ft)				150	150						
Storage Blk Time (%)			55	2	5	24					
Queuing Penalty (veh)			57	5	33	21					

Intersection: 3: Arlington Street & Walgreens Driveway

Movement	EB	WB	NB	NB
Directions Served	TR	LT	L	R
Maximum Queue (ft)	220	386	281	271
Average Queue (ft)	23	113	193	56
95th Queue (ft)	120	340	348	199
Link Distance (ft)	212	363	257	257
Upstream Blk Time (%)	1	6	47	6
Queuing Penalty (veh)	2	0	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 567

Intersection: 1: McLoughlin Driveway & OR 99E

Movement	NB	NB	NB
Directions Served	T	T	TR
Maximum Queue (ft)	606	599	180
Average Queue (ft)	103	108	12
95th Queue (ft)	345	342	97
Link Distance (ft)	616	616	
Upstream Blk Time (%)	1	1	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			200
Storage Blk Time (%)		4	0
Queuing Penalty (veh)		19	0

Intersection: 2: River Road & OR 99E

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	137	261	295	175	174	234	213	48	227	692	700
Average Queue (ft)	44	133	200	66	122	177	168	15	64	387	402
95th Queue (ft)	106	248	324	168	191	248	241	36	164	625	631
Link Distance (ft)	274	274	212			185	185	185	701	701	701
Upstream Blk Time (%)		1	23		1	16	12			0	1
Queuing Penalty (veh)		0	72		0	75	57			0	0
Storage Bay Dist (ft)				150	150						
Storage Blk Time (%)			33	0	14	15					
Queuing Penalty (veh)			30	1	77	21					

Intersection: 3: Arlington Street & Walgreens Driveway

Movement	EB	WB	NB	NB
Directions Served	TR	LT	L	R
Maximum Queue (ft)	113	230	219	79
Average Queue (ft)	9	43	82	26
95th Queue (ft)	59	181	220	105
Link Distance (ft)	212	371	256	256
Upstream Blk Time (%)	0	0	11	1
Queuing Penalty (veh)	0	0	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 352

Intersection: 1: McLoughlin Driveway & OR 99E

Movement	NB	NB	NB
Directions Served	T	T	TR
Maximum Queue (ft)	450	486	180
Average Queue (ft)	119	127	9
95th Queue (ft)	358	368	80
Link Distance (ft)	616	616	
Upstream Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			200
Storage Blk Time (%)		3	0
Queuing Penalty (veh)		20	0

Intersection: 2: River Road & OR 99E

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	160	123	307	191	174	275	273	85	218	364	375
Average Queue (ft)	44	43	285	81	87	221	227	25	101	192	212
95th Queue (ft)	110	93	316	160	167	306	307	58	188	325	340
Link Distance (ft)	274	274	212	212		185	185	185	701	701	701
Upstream Blk Time (%)			64	0	0	20	22				
Queuing Penalty (veh)			162	0	0	102	116				
Storage Bay Dist (ft)					150						
Storage Blk Time (%)					2	24					
Queuing Penalty (veh)					14	22					

Intersection: 3: Arlington Street & Walgreens Driveway

Movement	EB	WB	WB	NB	NB
Directions Served	TR	LT	T	L	R
Maximum Queue (ft)	224	214	63	292	278
Average Queue (ft)	47	103	4	264	149
95th Queue (ft)	181	222	45	289	358
Link Distance (ft)	212	119	119	257	257
Upstream Blk Time (%)	2	20	0	95	28
Queuing Penalty (veh)	7	44	0	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Arlington Street & Site Driveway

Movement	EB	WB	NB	NB
Directions Served	TR	LT	L	R
Maximum Queue (ft)	133	178	229	92
Average Queue (ft)	7	41	68	22
95th Queue (ft)	60	147	174	86
Link Distance (ft)	119	176	242	242
Upstream Blk Time (%)	0	4	5	1
Queuing Penalty (veh)	1	0	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 488

Intersection: 1: McLoughlin Driveway & OR 99E

Movement	NB	NB	NB
Directions Served	T	T	TR
Maximum Queue (ft)	260	260	90
Average Queue (ft)	63	64	6
95th Queue (ft)	201	198	66
Link Distance (ft)	616	616	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			200
Storage Blk Time (%)		1	0
Queuing Penalty (veh)		7	0

Intersection: 2: River Road & OR 99E

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	175	293	316	161	174	257	250	70	490	692	698
Average Queue (ft)	52	148	260	58	125	207	212	19	146	433	450
95th Queue (ft)	122	280	354	122	199	294	295	47	324	655	663
Link Distance (ft)	274	274	212	212		185	185	185	701	701	701
Upstream Blk Time (%)		3	50	0	1	17	14			1	1
Queuing Penalty (veh)		0	103	0	0	79	67			0	0
Storage Bay Dist (ft)					150						
Storage Blk Time (%)					14	17					
Queuing Penalty (veh)					81	24					

Intersection: 3: Arlington Street & Walgreens Driveway

Movement	EB	WB	WB	NB	NB
Directions Served	TR	LT	T	L	R
Maximum Queue (ft)	174	165	6	278	131
Average Queue (ft)	20	70	0	164	44
95th Queue (ft)	108	175	4	326	174
Link Distance (ft)	212	137	137	256	256
Upstream Blk Time (%)	1	15		41	6
Queuing Penalty (veh)	2	27		0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Arlington Street & Site Driveway

Movement	EB	WB	NB	NB
Directions Served	TR	LT	L	R
Maximum Queue (ft)	19	169	148	75
Average Queue (ft)	1	47	53	18
95th Queue (ft)	10	149	117	59
Link Distance (ft)	137	157	236	236
Upstream Blk Time (%)		5	1	0
Queuing Penalty (veh)		0	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 390

AAI afghan associates, inc.
ENGINEERING

MEMORANDUM

DATE: November 19, 2015
BY: Craig Harris, PE
SUBJECT: Preliminary Utility Memo
PROJECT: Arlington Retail – W Arlington St Gladstone, OR
PROJECT NO.: A15081.11

This memorandum is to outline the utility requirements and existing conditions for the proposed Arlington Retail project on W Arlington St. near McLoughlin Blvd. Gladstone, OR. The total site area is 229,316SF which gently slopes from the North to the South and is covered by mostly grasses with a few scattered small trees and shrubs. The lot then has a steep embankment that drops off to the Clackamas River. At this time we will be constructing one building that is approximately 18,000SF, pedestrian connections, parking and vehicle maneuvering as well as flood mitigation, water quality, flow control and detention systems. We will "pad out" two areas for future buildings. The utilities, water, sanitary and storm will be constructed now to serve the proposed building and the two future pad sites. We are designing the conveyance, detention, flow control and WQ facilities for "full build out" which includes the pads as impervious. At full build out the site will have 157,324SF impervious and 62,992SF pervious.

STORM

Storm runoff from the new parking lot and sidewalks will be collected in catchbasins while roof runoff will be collected in downspouts. These will be hard-piped to a new detention facility (48" diameter CMP pipes) located in parking lot north of the proposed building. We are providing 12" PVC stubs to each pad for future connection of the buildings. From the detention facility the flows will be released through a flow control manhole that will limit post construction flows to meet jurisdictional rates (developed 2yr design storm to 1\2 of the pre-development rate and match the post development 10yr, 25yr flows to that of the undeveloped site). From the flow control manhole the discharge passes through a WQ manhole (CDS unit from Contech) for treatment. Once treated the flow is piped to an existing outfall where is will be discharged and flow to the Clackamas River. There is an emergency overflow which will be above the max. water level of the 25yr design storm to allow larger storm events to exit the detention facility and not cause adverse effects to the surrounding building and sidewalks. We are also providing Flood Mitigation for areas that will be disturbed on-site. See the attached calculations for verification of these design statements.

SANITARY

There is a sanitary line running in W Arlington. We will tie into it with a (2) 6" taps to service our site.

Water

There is a public water main running along the neighboring property that has an 8" stub to our property. We will utilize this stub for Fire and Domestic water.

cc: File

4875 SW Griffith Drive | Suite 300 | Beaverton, OR | 97005

503.620.3030 | tel 503.620.5539 | fax www.aaieng.com

Summary for Pond 1P: Existing Storage Volumes

[43] Hint: Has no inflow (Outflow=Zero)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	14,727 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	0	0	0
46.00	1,832	916	916
47.00	6,507	4,170	5,086
48.00	12,775	9,641	14,727

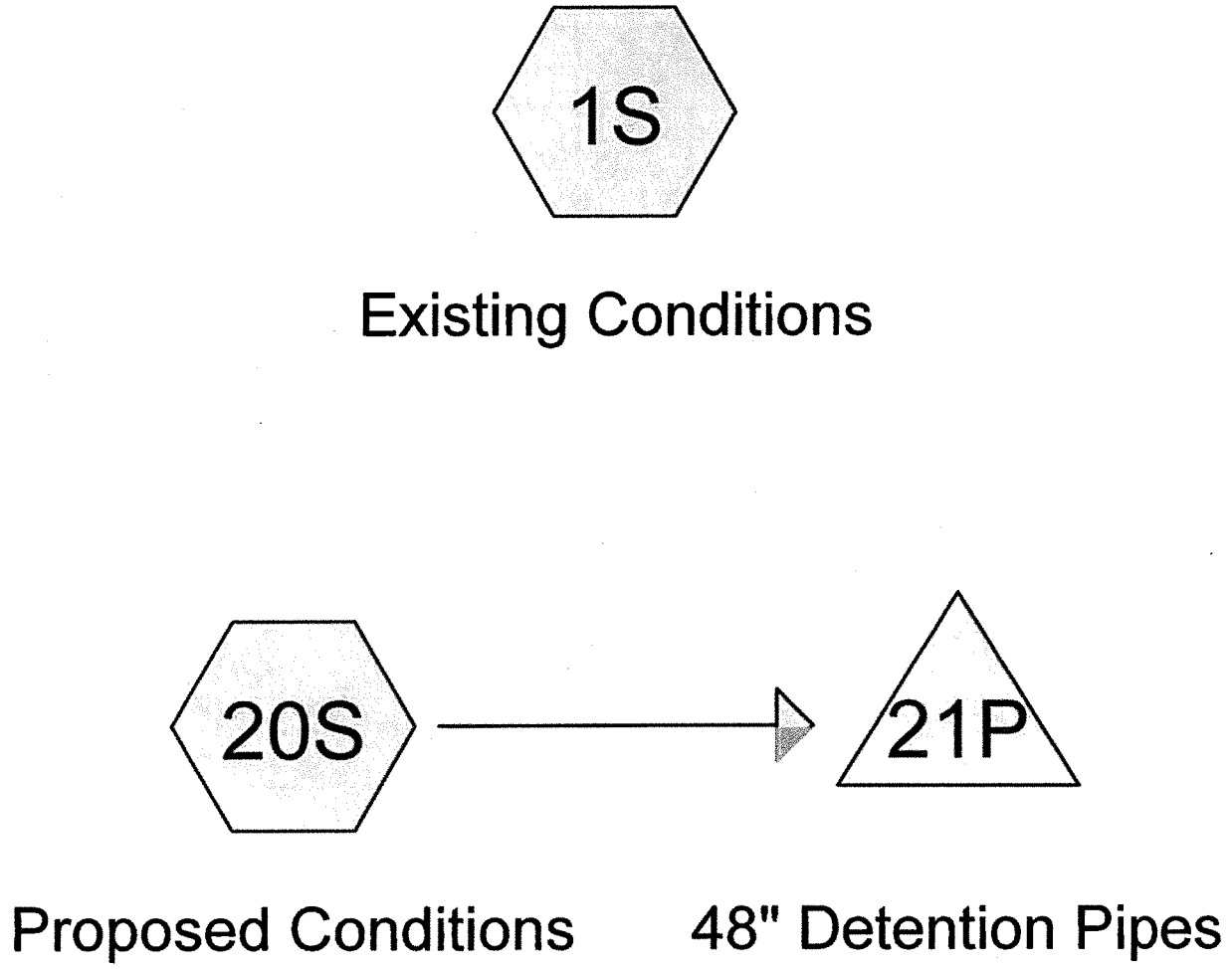
2P

SC-740 Chambers

Subcat Reach Pond Link

Stage-Area-Storage for Pond 2P: SC-740 Chambers

Elevation (feet)	Storage (cubic-feet)
45.00	0
45.05	257
45.10	513
45.15	770
45.20	1,026
45.25	1,282
45.30	1,538
45.35	1,794
45.40	2,050
45.45	2,305
45.50	2,561
45.55	2,816
45.60	3,071
45.65	3,326
45.70	3,580
45.75	3,835
45.80	4,089
45.85	4,343
45.90	4,596
45.95	4,850
46.00	5,103
46.05	5,355
46.10	5,608
46.15	5,860
46.20	6,112
46.25	6,364
46.30	6,615
46.35	6,866
46.40	7,116
46.45	7,366
46.50	7,616
46.55	7,865
46.60	8,114
46.65	8,362
46.70	8,610
46.75	8,857
46.80	9,104
46.85	9,350
46.90	9,595
46.95	9,840
47.00	10,084
47.05	10,327
47.10	10,570
47.15	10,811
47.20	11,051
47.25	11,289
47.30	11,526
47.35	11,761
47.40	11,996
47.45	12,230
47.50	12,463
47.55	12,695
47.60	12,928
47.65	13,161
47.70	13,394
47.75	13,626
47.80	13,859
47.85	14,092
47.90	14,324
47.95	14,557
48.00	14,790
48.05	15,022
48.10	15,255
48.15	15,488
48.20	15,721
48.25	**15,953**



Routing Diagram for A15106.11 - Arlington Retail
Prepared by AAI Engineering, Printed 11/19/2015
HydroCAD® 10.00-13 s/n 01638 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.446	74	Grass cover (20S)
5.264	84	Pasture/grassland/range, Fair, HSG D (1S)
5.150	98	Paved parking, Sidewalks Roofs (20S)
11.860	**89**	**TOTAL AREA**

Time span=1.00-60.00 hrs, dt=0.05 hrs, 1181 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Conditions Runoff Area=229,316 sf 0.00% Impervious Runoff Depth=1.19"
Flow Length=300' Slope=0.0200 '/' Tc=11.1 min CN=84/0 Runoff=1.30 cfs 0.524 af

Subcatchment 20S: Proposed Conditions Runoff Area=287,308 sf 78.08% Impervious Runoff Depth>2.00"
Tc=5.0 min CN=74/98 Runoff=3.22 cfs 1.097 af

Pond 21P: 48" Detention Pipes Peak Elev=45.37' Storage=12,778 cf Inflow=3.22 cfs 1.097 af
Outflow=0.64 cfs 1.097 af

Total Runoff Area = 11.860 ac Runoff Volume = 1.621 af Average Runoff Depth = 1.64"
56.58% Pervious = 6.710 ac 43.42% Impervious = 5.150 ac

Summary for Subcatchment 1S: Existing Conditions

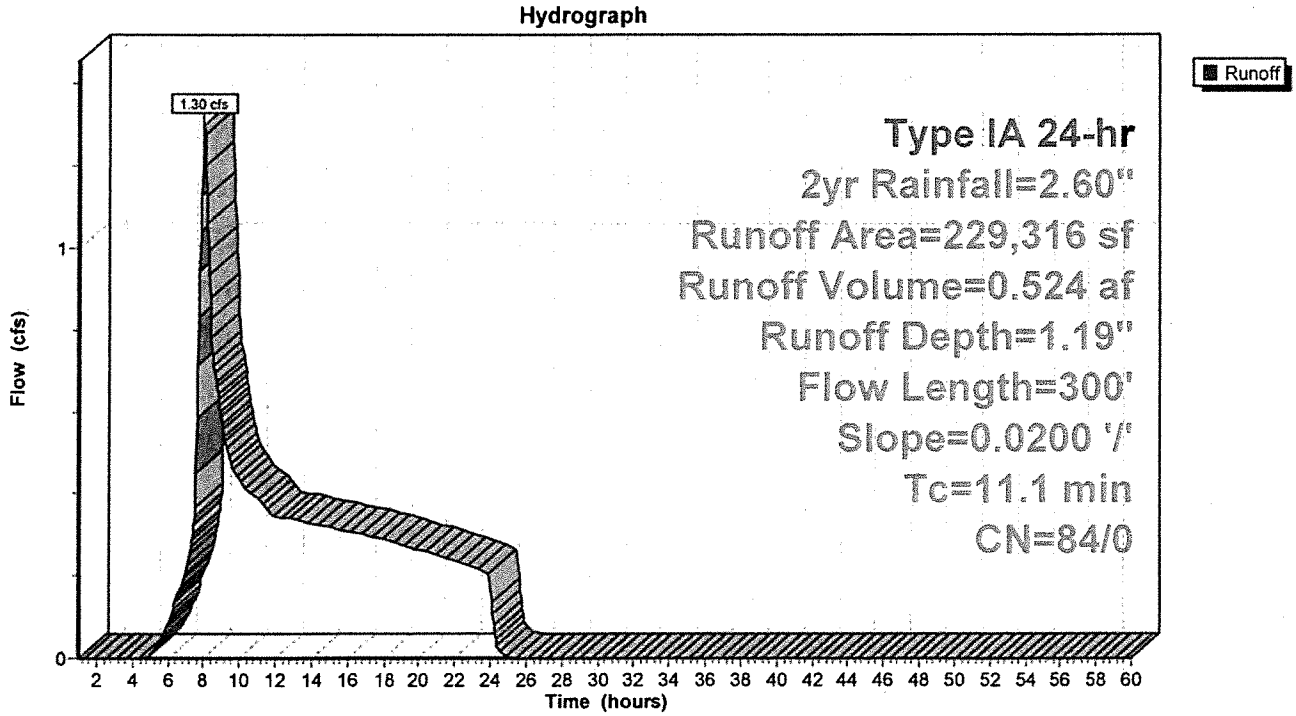
Runoff = 1.30 cfs @ 8.01 hrs, Volume= 0.524 af, Depth= 1.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2yr Rainfall=2.60"

Area (sf)	CN	Description
229,316	84	Pasture/grassland/range, Fair, HSG D
229,316	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0200	0.45		**Sheet Flow,** Fallow n= 0.050 P2= 2.50"

Subcatchment 1S: Existing Conditions



Summary for Subcatchment 20S: Proposed Conditions

[49] Hint: Tc<2dt may require smaller dt

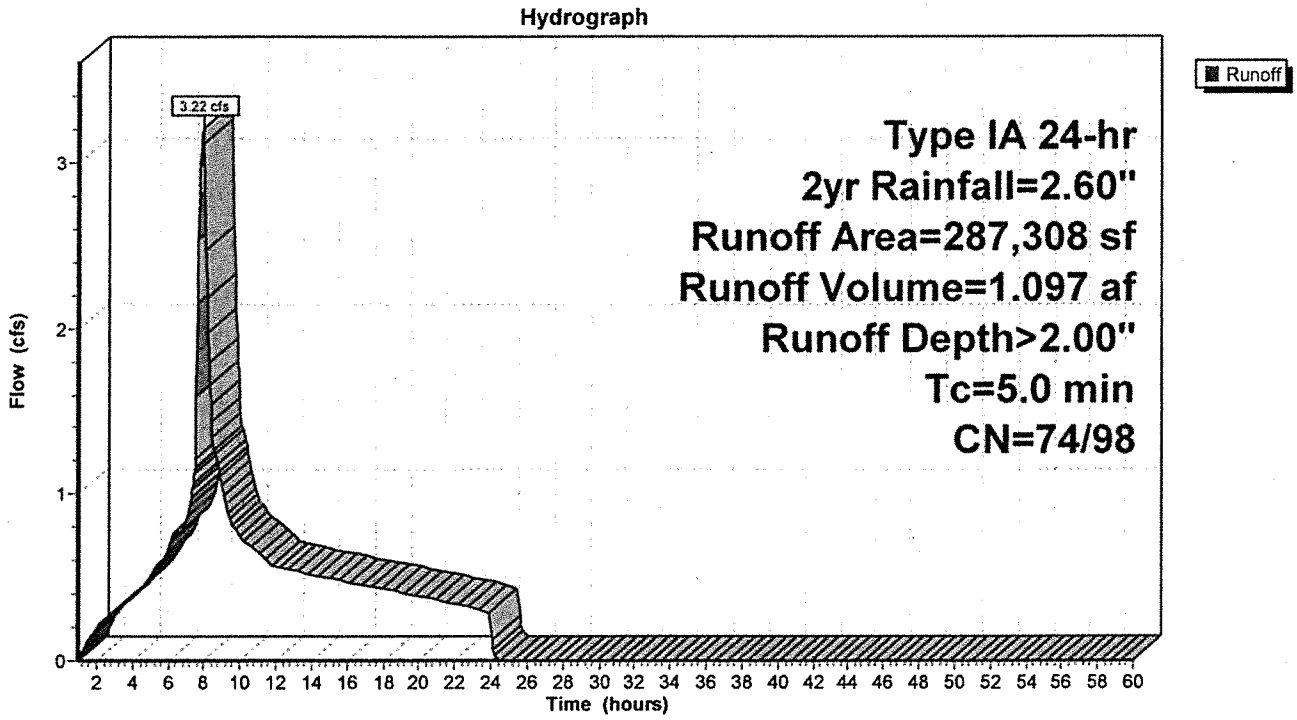
Runoff = 3.22 cfs @ 7.91 hrs, Volume= 1.097 af, Depth> 2.00"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2yr Rainfall=2.60"

	Area (sf)	CN	Description
*	224,316	98	Paved parking, Sidewalks Roofs
*	62,992	74	Grass cover
	287,308	93	Weighted Average
	62,992	74	21.92% Pervious Area
	224,316	98	78.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 20S: Proposed Conditions



Summary for Pond 21P: 48" Detention Pipes

[82] Warning: Early inflow requires earlier time span

Inflow Area = 6.596 ac, 78.08% Impervious, Inflow Depth > 2.00" for 2yr event
Inflow = 3.22 cfs @ 7.91 hrs, Volume= 1.097 af
Outflow = 0.64 cfs @ 11.16 hrs, Volume= 1.097 af, Atten= 80%, Lag= 194.9 min
Primary = 0.64 cfs @ 11.16 hrs, Volume= 1.097 af

Routing by Stor-Ind method, Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 45.37' @ 11.16 hrs Surf.Area= 5,727 sf Storage= 12,778 cf

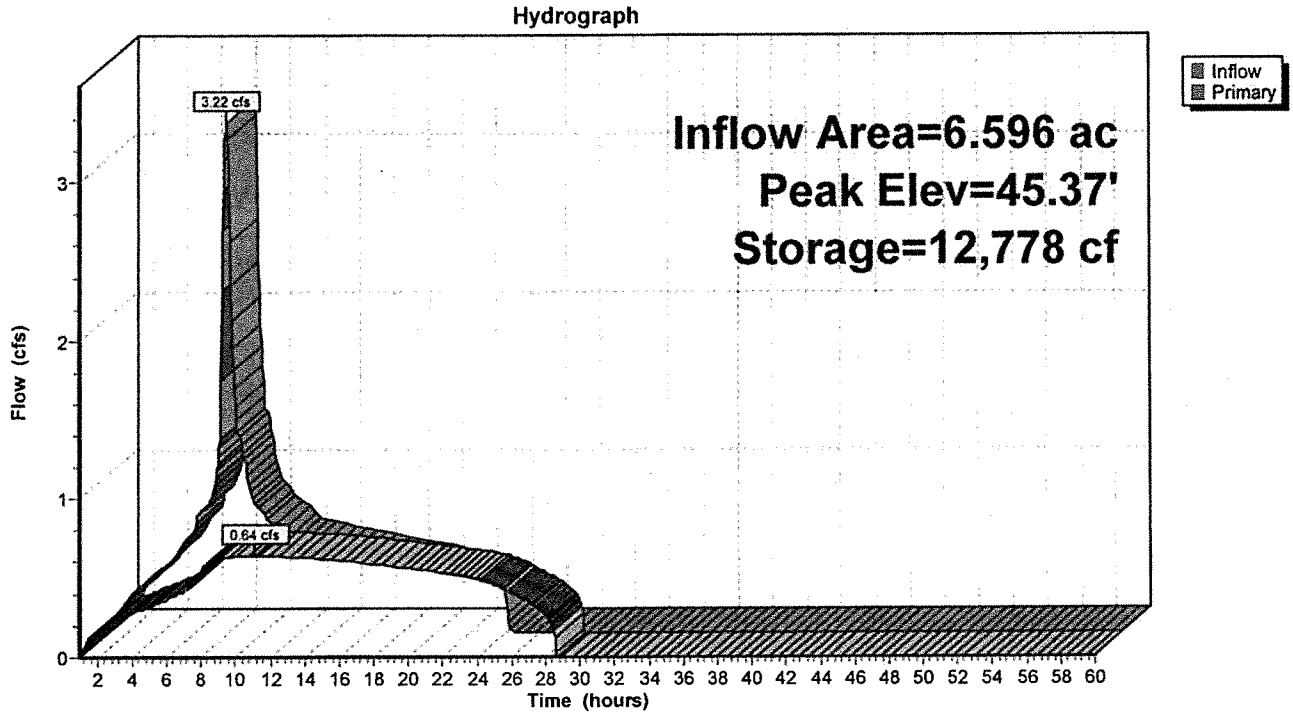
Plug-Flow detention time= 236.6 min calculated for 1.096 af (100% of inflow)
Center-of-Mass det. time= 236.6 min (925.5 - 688.9)

Volume	Invert	Avail.Storage	Storage Description
#1	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#2	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#3	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#4	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#5	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
		18,850 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	42.50'	**3.8" Horiz. 1/2 2 yr** C= 0.600 Limited to weir flow at low heads
#2	Primary	45.37'	**12.0" W x 6.6" H Vert. 10ry/25yr** C= 0.600
#3	Primary	46.36'	**15.0" Horiz. Emergency Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.64 cfs @ 11.16 hrs HW=45.37' (Free Discharge)
- **1=1/2 2 yr** (Orifice Controls 0.64 cfs @ 8.16 fps)
- **2=10ry/25yr** (Controls 0.00 cfs)
- **3=Emergency Overflow** (Controls 0.00 cfs)

Pond 21P: 48" Detention Pipes



Time span=1.00-60.00 hrs, dt=0.05 hrs, 1181 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Conditions Runoff Area=229,316 sf 0.00% Impervious Runoff Depth=2.02"
Flow Length=300' Slope=0.0200 '/' Tc=11.1 min CN=84/0 Runoff=2.40 cfs 0.887 af

Subcatchment 20S: Proposed Conditions Runoff Area=287,308 sf 78.08% Impervious Runoff Depth>2.91"
Tc=5.0 min CN=74/98 Runoff=4.71 cfs 1.601 af

Pond 21P: 48" Detention Pipes Peak Elev=45.95' Storage=15,909 cf Inflow=4.71 cfs 1.601 af
Outflow=2.12 cfs 1.601 af

Total Runoff Area = 11.860 ac Runoff Volume = 2.489 af Average Runoff Depth = 2.52"
56.58% Pervious = 6.710 ac 43.42% Impervious = 5.150 ac

Summary for Subcatchment 1S: Existing Conditions

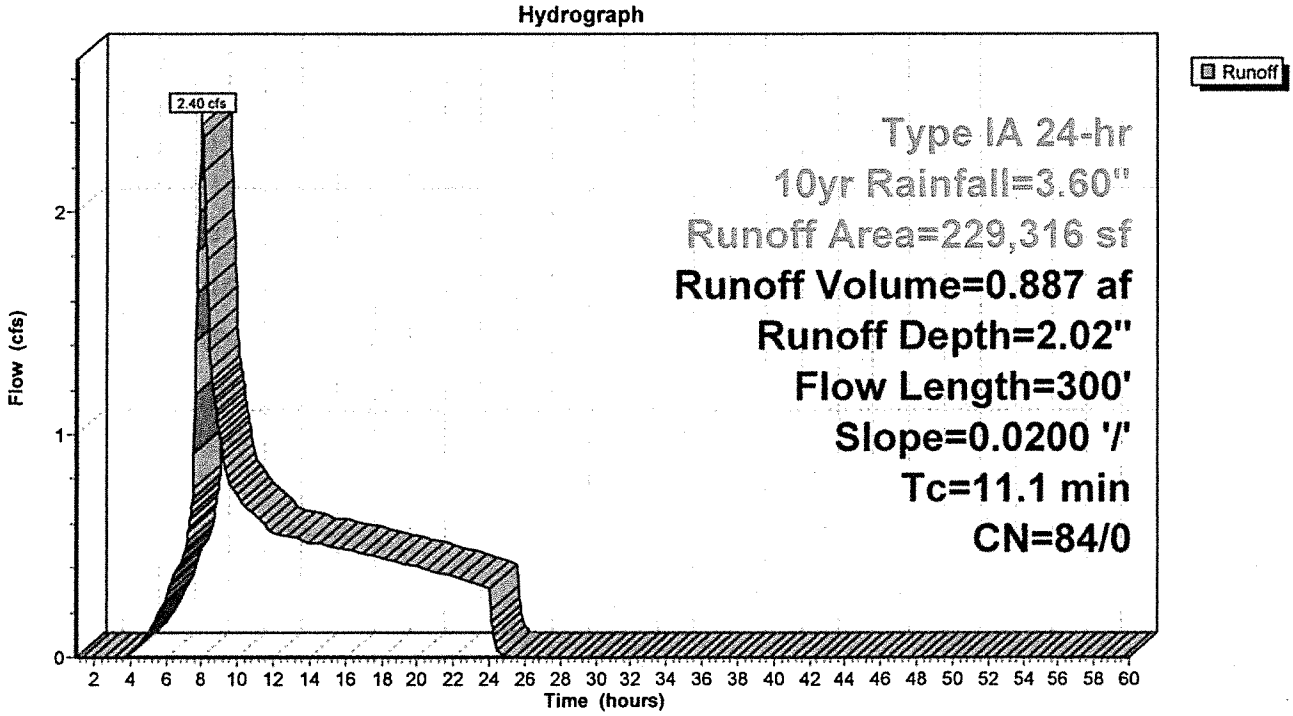
Runoff = 2.40 cfs @ 8.00 hrs, Volume= 0.887 af, Depth= 2.02"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10yr Rainfall=3.60"

Area (sf)	CN	Description
229,316	84	Pasture/grassland/range, Fair, HSG D
229,316	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0200	0.45		**Sheet Flow,** Fallow n= 0.050 P2= 2.50"

Subcatchment 1S: Existing Conditions



Summary for Subcatchment 20S: Proposed Conditions

[49] Hint: Tc<2dt may require smaller dt

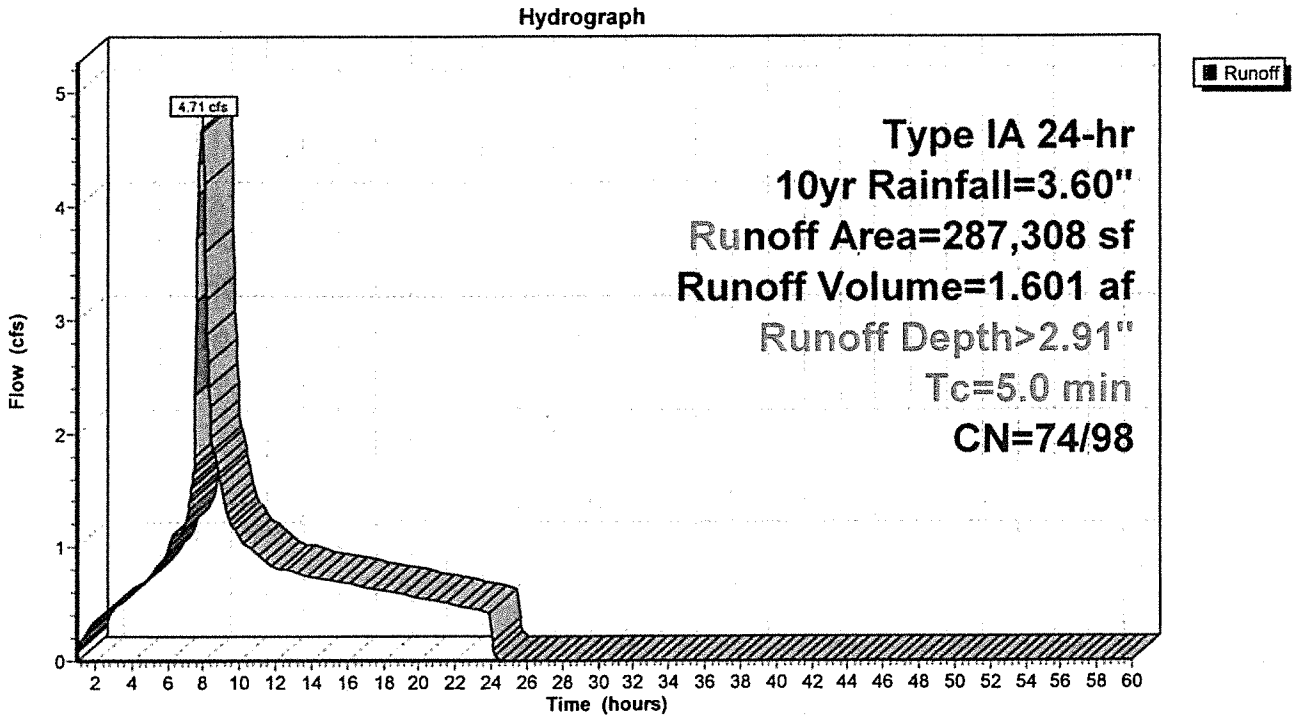
Runoff = 4.71 cfs @ 7.91 hrs, Volume= 1.601 af, Depth> 2.91"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10yr Rainfall=3.60"

	Area (sf)	CN	Description
*	224,316	98	Paved parking, Sidewalks Roofs
*	62,992	74	Grass cover
	287,308	93	Weighted Average
	62,992	74	21.92% Pervious Area
	224,316	98	78.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 20S: Proposed Conditions



Summary for Pond 21P: 48" Detention Pipes

[82] Warning: Early inflow requires earlier time span

Inflow Area = 6.596 ac, 78.08% Impervious, Inflow Depth > 2.91" for 10yr event
Inflow = 4.71 cfs @ 7.91 hrs, Volume= 1.601 af
Outflow = 2.12 cfs @ 8.39 hrs, Volume= 1.601 af, Atten= 55%, Lag= 29.0 min
Primary = 2.12 cfs @ 8.39 hrs, Volume= 1.601 af

Routing by Stor-Ind method, Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 45.95' @ 8.39 hrs Surf.Area= 4,859 sf Storage= 15,909 cf

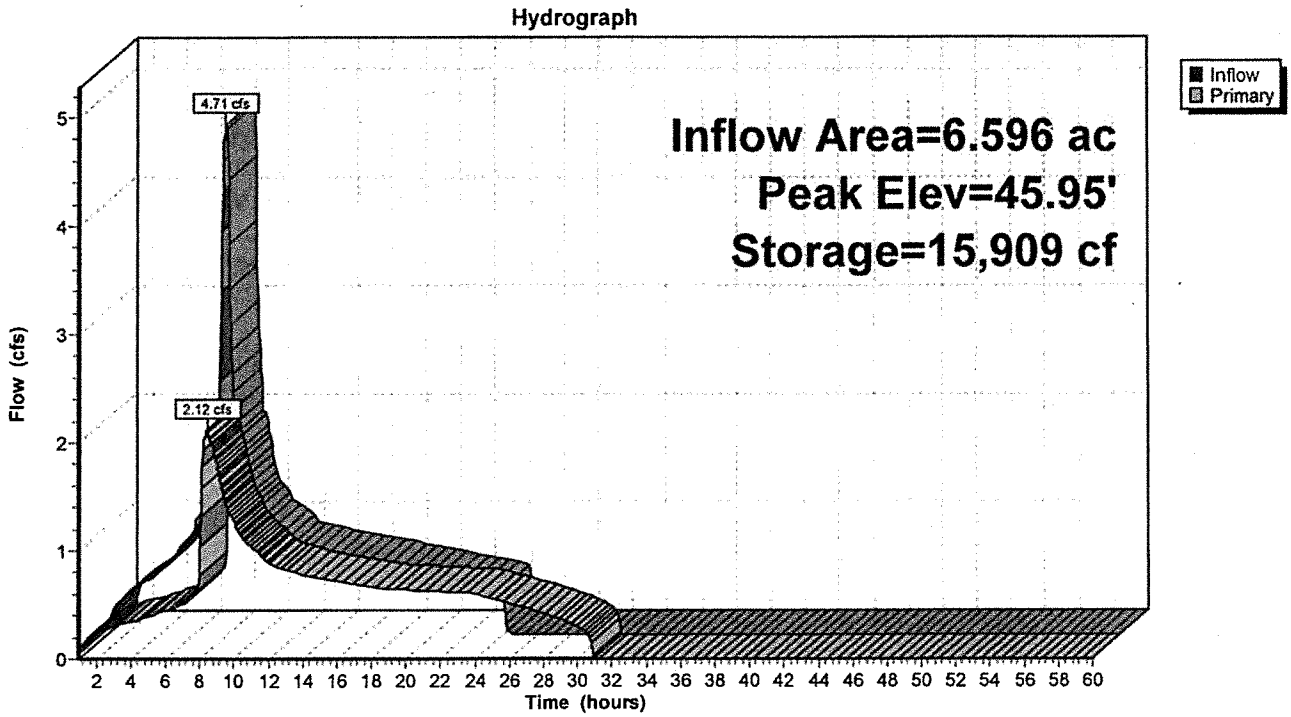
Plug-Flow detention time= 226.8 min calculated for 1.600 af (100% of inflow)
Center-of-Mass det. time= 226.9 min (908.8 - 681.9)

Volume	Invert	Avail.Storage	Storage Description
#1	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#2	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#3	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#4	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#5	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
		18,850 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	42.50'	**3.8" Horiz. 1/2 2 yr** C= 0.600 Limited to weir flow at low heads
#2	Primary	45.37'	**12.0" W x 6.6" H Vert. 10ry/25yr** C= 0.600
#3	Primary	46.36'	**15.0" Horiz. Emergency Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.12 cfs @ 8.39 hrs HW=45.95' (Free Discharge)
- **1=1/2 2 yr** (Orifice Controls 0.70 cfs @ 8.95 fps)
- **2=10ry/25yr** (Orifice Controls 1.41 cfs @ 2.56 fps)
- **3=Emergency Overflow** (Controls 0.00 cfs)

Pond 21P: 48" Detention Pipes



Time span=1.00-60.00 hrs, dt=0.05 hrs, 1181 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Conditions Runoff Area=229,316 sf 0.00% Impervious Runoff Depth=2.46"
Flow Length=300' Slope=0.0200 '/' Tc=11.1 min CN=84/0 Runoff=2.98 cfs 1.079 af

Subcatchment 20S: Proposed Conditions Runoff Area=287,308 sf 78.08% Impervious Runoff Depth>3.38"
Tc=5.0 min CN=74/98 Runoff=5.46 cfs 1.858 af

Pond 21P: 48" Detention Pipes Peak Elev=46.36' Storage=17,680 cf Inflow=5.46 cfs 1.858 af
Outflow=2.98 cfs 1.858 af

Total Runoff Area = 11.860 ac Runoff Volume = 2.937 af Average Runoff Depth = 2.97"
56.58% Pervious = 6.710 ac 43.42% Impervious = 5.150 ac

Summary for Subcatchment 1S: Existing Conditions

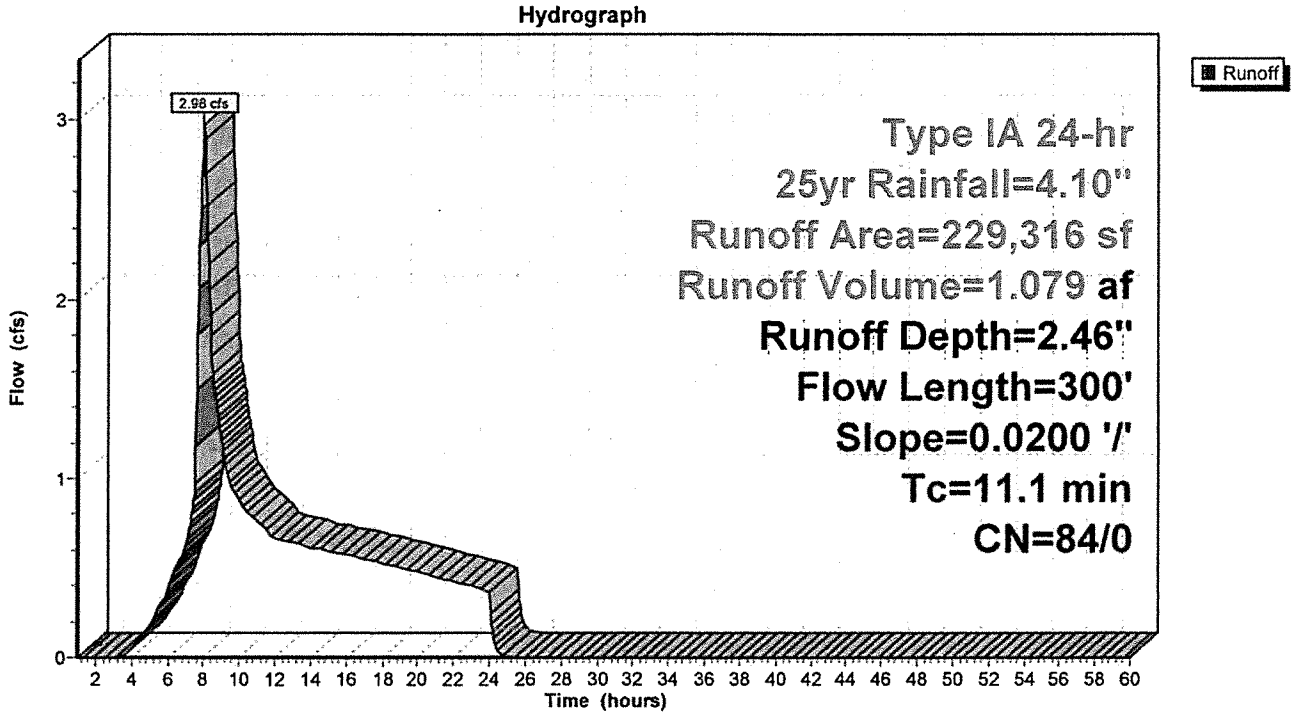
Runoff = 2.98 cfs @ 8.00 hrs, Volume= 1.079 af, Depth= 2.46"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25yr Rainfall=4.10"

Area (sf)	CN	Description
229,316	84	Pasture/grassland/range, Fair, HSG D
229,316	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0200	0.45		**Sheet Flow,** Fallow n= 0.050 P2= 2.50"

Subcatchment 1S: Existing Conditions



Summary for Subcatchment 20S: Proposed Conditions

[49] Hint: Tc<2dt may require smaller dt

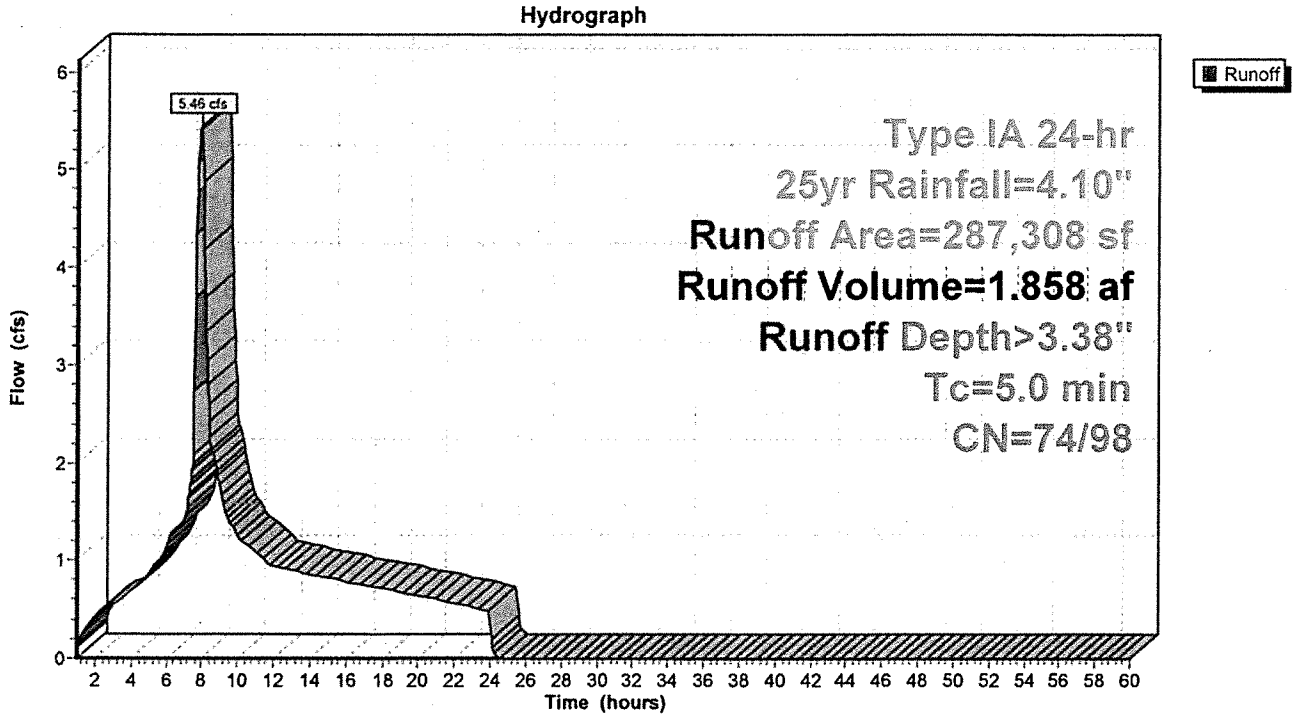
Runoff = 5.46 cfs @ 7.91 hrs, Volume= 1.858 af, Depth> 3.38"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25yr Rainfall=4.10"

	Area (sf)	CN	Description
*	224,316	98	Paved parking, Sidewalks Roofs
*	62,992	74	Grass cover
	287,308	93	Weighted Average
	62,992	74	21.92% Pervious Area
	224,316	98	78.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 20S: Proposed Conditions



Summary for Pond 21P: 48" Detention Pipes

[82] Warning: Early inflow requires earlier time span

Inflow Area =	6.596 ac, 78.08% Impervious, Inflow Depth > 3.38" for 25yr event				
Inflow =	5.46 cfs @	7.91 hrs, Volume=	1.858 af		
Outflow =	2.98 cfs @	8.26 hrs, Volume=	1.858 af, Atten= 45%, Lag= 21.2 min		
Primary =	2.98 cfs @	8.26 hrs, Volume=	1.858 af		

Routing by Stor-Ind method, Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 46.36' @ 8.27 hrs Surf.Area= 3,636 sf Storage= 17,680 cf

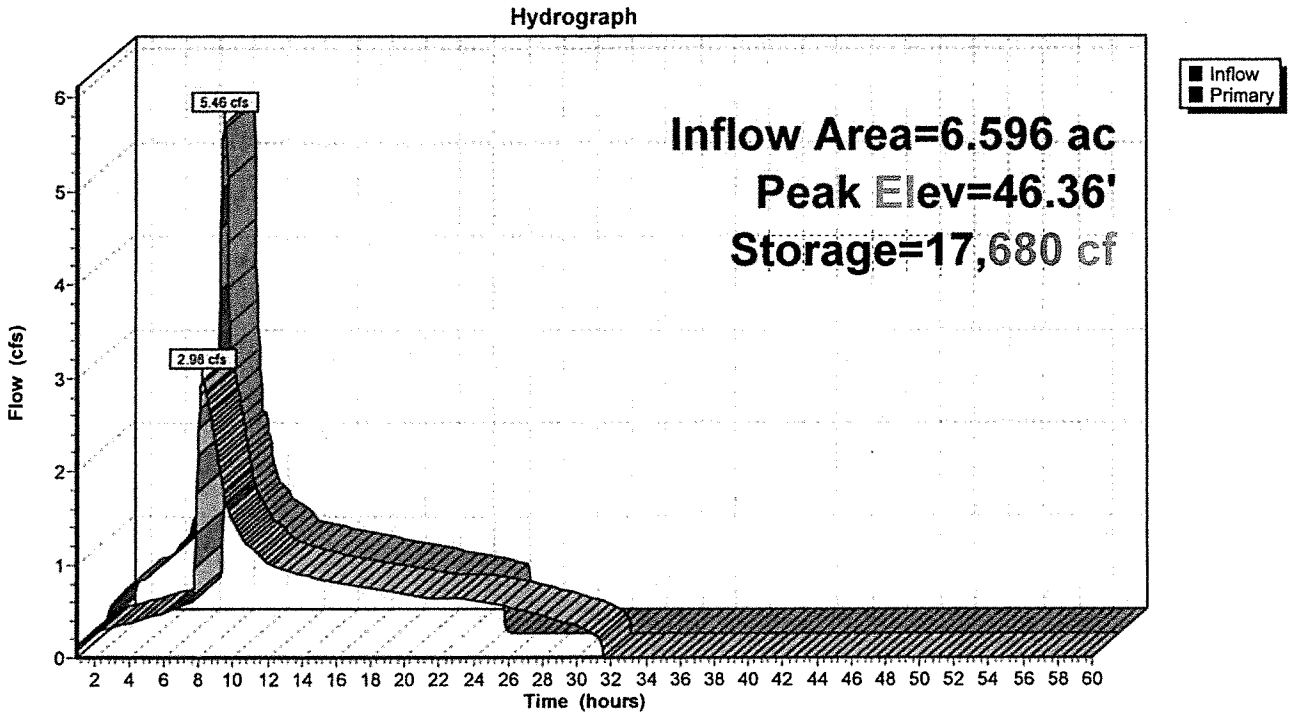
Plug-Flow detention time= 212.1 min calculated for 1.858 af (100% of inflow)
Center-of-Mass det. time= 212.0 min (891.4 - 679.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#2	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#3	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#4	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#5	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
		18,850 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	42.50'	**3.8" Horiz. 1/2 2 yr** C= 0.600 Limited to weir flow at low heads
#2	Primary	45.37'	**12.0" W x 6.6" H Vert. 10ry/25yr** C= 0.600
#3	Primary	46.36'	**15.0" Horiz. Emergency Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.98 cfs @ 8.26 hrs HW=46.36' (Free Discharge)
- **1=1/2 2 yr** (Orifice Controls 0.75 cfs @ 9.46 fps)
- **2=10ry/25yr** (Orifice Controls 2.23 cfs @ 4.05 fps)
- **3=Emergency Overflow** (Weir Controls 0.00 cfs @ 0.18 fps)

Pond 21P: 48" Detention Pipes



Time span=1.00-60.00 hrs, dt=0.05 hrs, 1181 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Conditions Runoff Area=229,316 sf 0.00% Impervious Runoff Depth=2.82"
Flow Length=300' Slope=0.0200 '/' Tc=11.1 min CN=84/0 Runoff=3.46 cfs 1.236 af

Subcatchment 20S: Proposed Conditions Runoff Area=287,308 sf 78.08% Impervious Runoff Depth>3.76"
Tc=5.0 min CN=74/98 Runoff=6.07 cfs 2.065 af

Pond 21P: 48" Detention Pipes Peak Elev=46.61' Storage=18,411 cf Inflow=6.07 cfs 2.065 af
Outflow=4.96 cfs 2.065 af

Total Runoff Area = 11.860 ac Runoff Volume = 3.301 af Average Runoff Depth = 3.34"
56.58% Pervious = 6.710 ac 43.42% Impervious = 5.150 ac

Summary for Subcatchment 1S: Existing Conditions

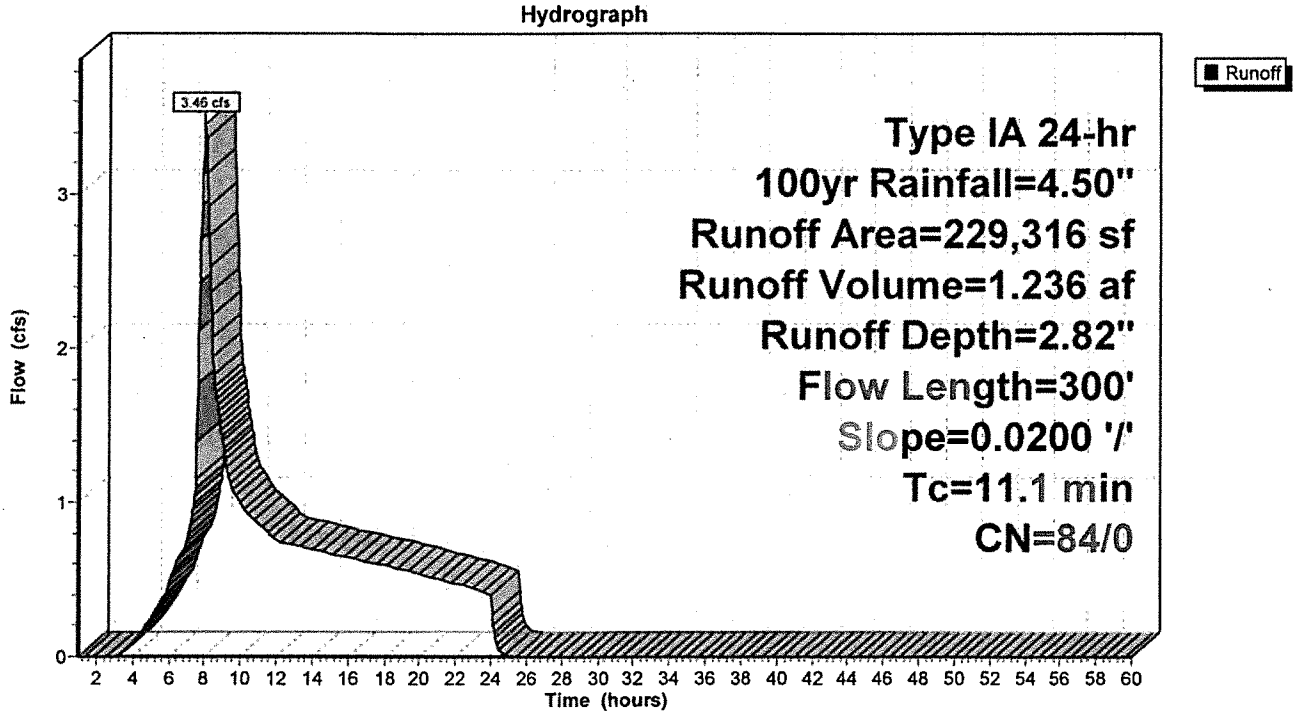
Runoff = 3.46 cfs @ 8.00 hrs, Volume= 1.236 af, Depth= 2.82"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100yr Rainfall=4.50"

Area (sf)	CN	Description
229,316	84	Pasture/grassland/range, Fair, HSG D
229,316	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0200	0.45		**Sheet Flow,** Fallow n= 0.050 P2= 2.50"

Subcatchment 1S: Existing Conditions



Summary for Subcatchment 20S: Proposed Conditions

[49] Hint: Tc<2dt may require smaller dt

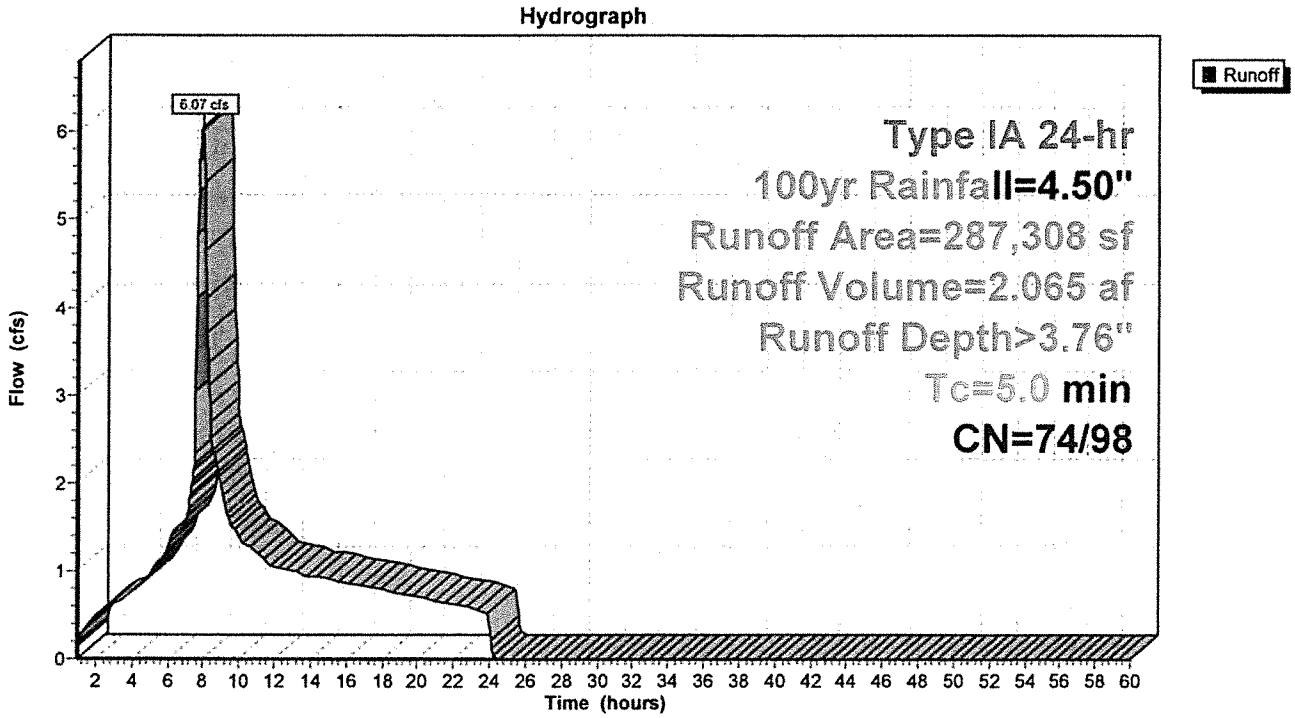
Runoff = 6.07 cfs @ 7.91 hrs, Volume= 2.065 af, Depth> 3.76"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100yr Rainfall=4.50"

	Area (sf)	CN	Description
*	224,316	98	Paved parking, Sidewalks Roofs
*	62,992	74	Grass cover
	287,308	93	Weighted Average
	62,992	74	21.92% Pervious Area
	224,316	98	78.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 20S: Proposed Conditions



Summary for Pond 21P: 48" Detention Pipes

[82] Warning: Early inflow requires earlier time span

Inflow Area =	6.596 ac, 78.08% Impervious, Inflow Depth > 3.76" for 100yr event				
Inflow =	6.07 cfs @	7.91 hrs, Volume=	2.065 af		
Outflow =	4.96 cfs @	8.09 hrs, Volume=	2.065 af,	Atten= 18%,	Lag= 10.9 min
Primary =	4.96 cfs @	8.09 hrs, Volume=	2.065 af		

Routing by Stor-Ind method, Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 46.61' @ 8.09 hrs Surf.Area= 2,207 sf Storage= 18,411 cf

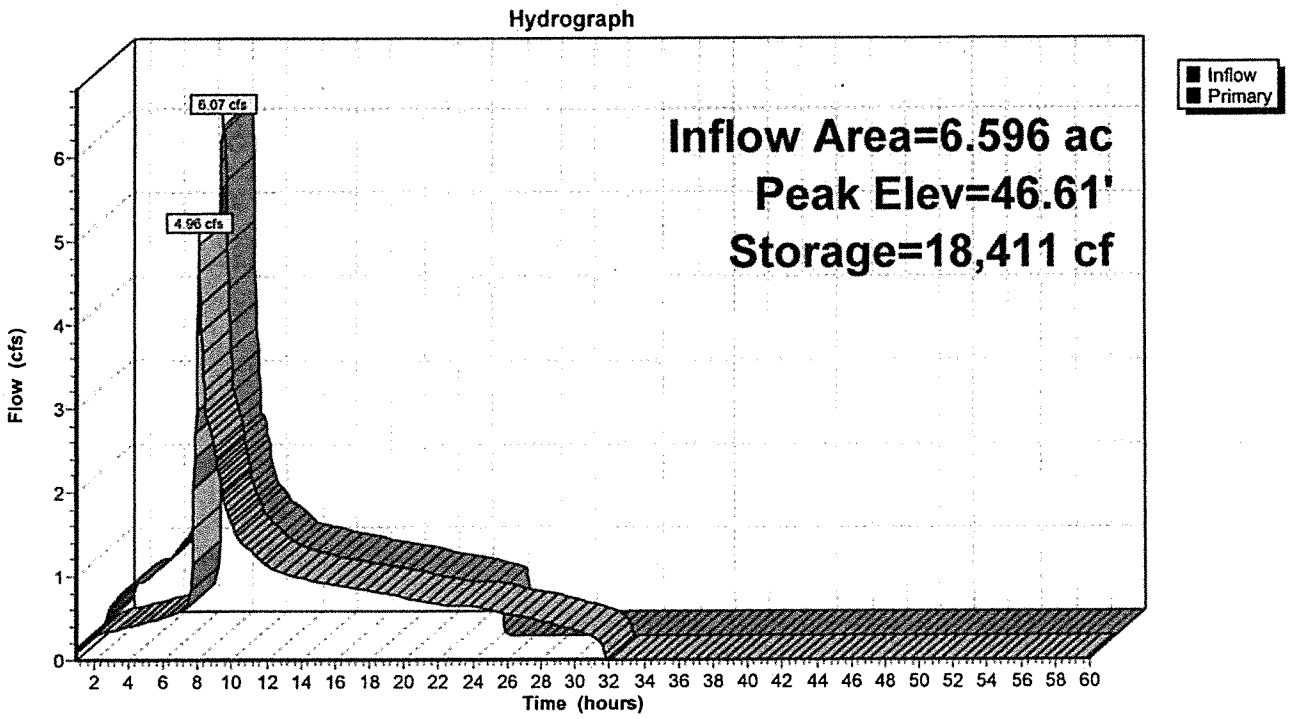
Plug-Flow detention time= 199.9 min calculated for 2.065 af (100% of inflow)
Center-of-Mass det. time= 199.8 min (877.5 - 677.7)

Volume	Invert	Avail.Storage	Storage Description
#1	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#2	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#3	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#4	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#5	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
		18,850 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	42.50'	**3.8" Horiz. 1/2 2 yr** C= 0.600 Limited to weir flow at low heads
#2	Primary	45.37'	**12.0" W x 6.6" H Vert. 10ry/25yr** C= 0.600
#3	Primary	46.36'	**15.0" Horiz. Emergency Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.92 cfs @ 8.09 hrs HW=46.61' (Free Discharge)
- **1=1/2 2 yr** (Orifice Controls 0.77 cfs @ 9.76 fps)
- **2=10ry/25yr** (Orifice Controls 2.59 cfs @ 4.70 fps)
- **3=Emergency Overflow** (Weir Controls 1.56 cfs @ 1.62 fps)

Pond 21P: 48" Detention Pipes



Time span=1.00-60.00 hrs, dt=0.05 hrs, 1181 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Conditions Runoff Area=229,316 sf 0.00% Impervious Runoff Depth=0.61"
Flow Length=300' Slope=0.0200 '/' Tc=11.1 min CN=84/0 Runoff=0.55 cfs 0.266 af

Subcatchment 20S: Proposed Conditions Runoff Area=287,308 sf 78.08% Impervious Runoff Depth=1.29"
Tc=5.0 min CN=74/98 Runoff=2.08 cfs 0.708 af

Pond 21P: 48" Detention Pipes Peak Elev=44.29' Storage=6,416 cf Inflow=2.08 cfs 0.708 af
Outflow=0.51 cfs 0.708 af

Total Runoff Area = 11.860 ac Runoff Volume = 0.974 af Average Runoff Depth = 0.99"
56.58% Pervious = 6.710 ac 43.42% Impervious = 5.150 ac

Summary for Subcatchment 1S: Existing Conditions

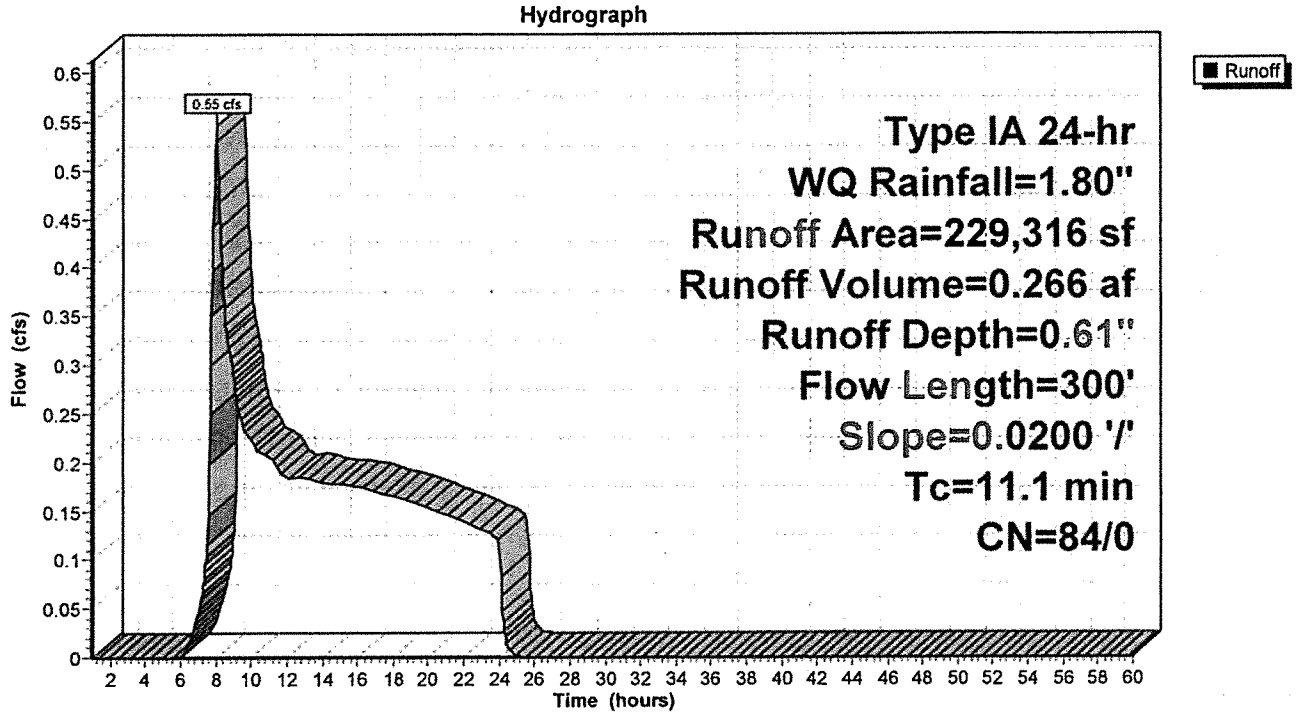
Runoff = 0.55 cfs @ 8.02 hrs, Volume= 0.266 af, Depth= 0.61"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr WQ Rainfall=1.80"

Area (sf)	CN	Description
229,316	84	Pasture/grassland/range, Fair, HSG D
229,316	84	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0200	0.45		**Sheet Flow,** Fallow n= 0.050 P2= 2.50"

Subcatchment 1S: Existing Conditions



Summary for Subcatchment 20S: Proposed Conditions

[49] Hint: Tc<2dt may require smaller dt

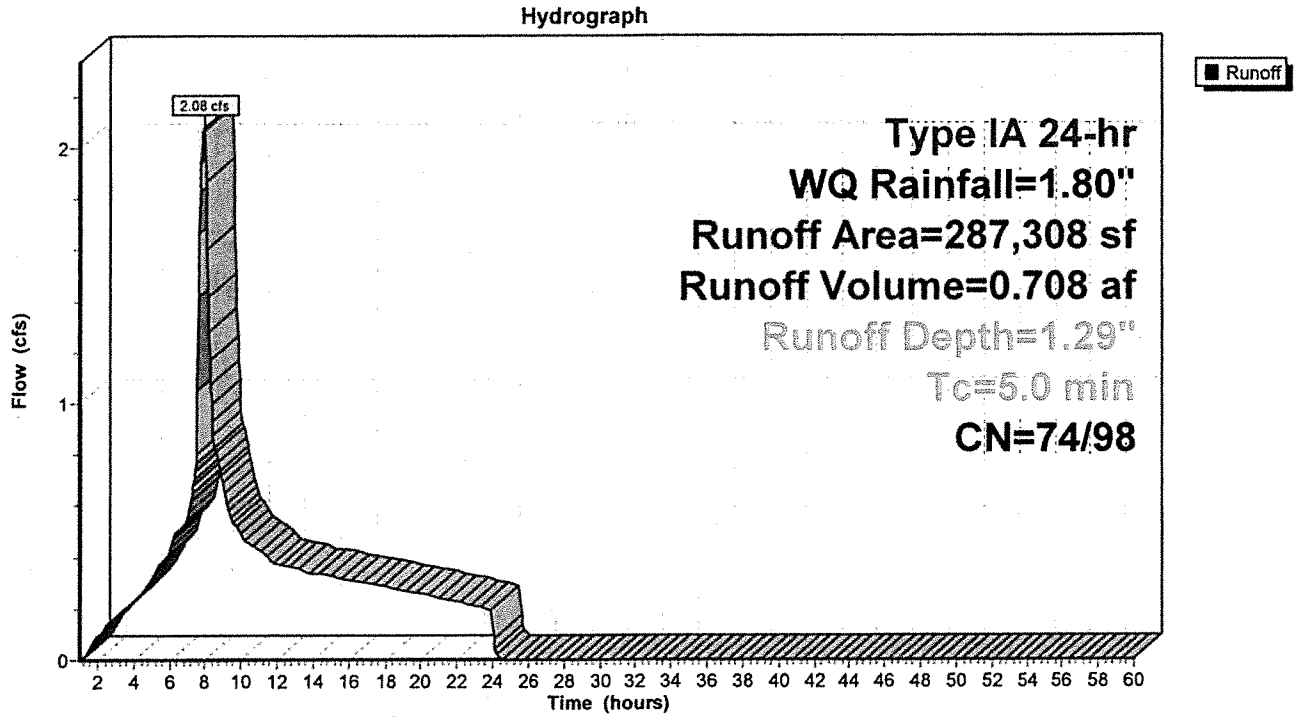
Runoff = 2.08 cfs @ 7.91 hrs, Volume= 0.708 af, Depth= 1.29"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Type IA 24-hr WQ Rainfall=1.80"

	Area (sf)	CN	Description
*	224,316	98	Paved parking, Sidewalks Roofs
*	62,992	74	Grass cover
	287,308	93	Weighted Average
	62,992	74	21.92% Pervious Area
	224,316	98	78.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 20S: Proposed Conditions



Summary for Pond 21P: 48" Detention Pipes

Inflow Area = 6.596 ac, 78.08% Impervious, Inflow Depth = 1.29" for WQ event
Inflow = 2.08 cfs @ 7.91 hrs, Volume= 0.708 af
Outflow = 0.51 cfs @ 9.90 hrs, Volume= 0.708 af, Atten= 76%, Lag= 119.2 min
Primary = 0.51 cfs @ 9.90 hrs, Volume= 0.708 af

Routing by Stor-Ind method, Time Span= 1.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 44.29' @ 9.90 hrs Surf.Area= 5,778 sf Storage= 6,416 cf

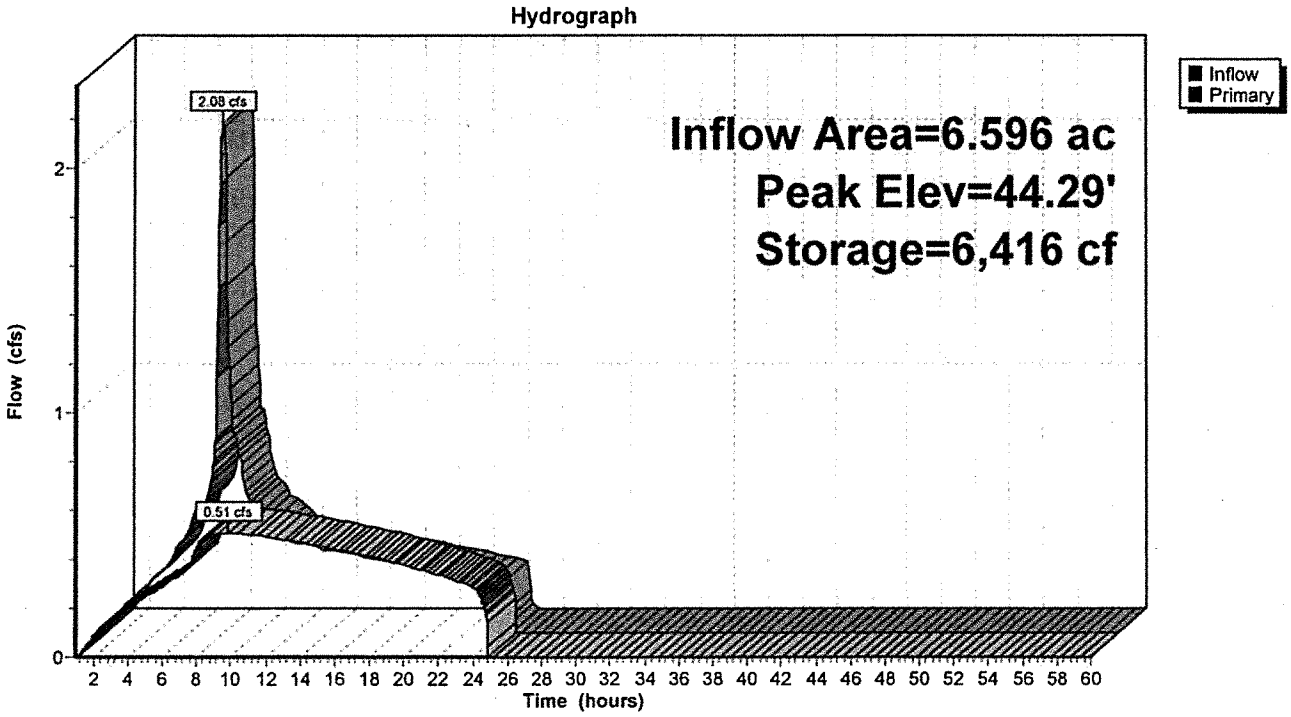
Plug-Flow detention time= 129.0 min calculated for 0.707 af (100% of inflow)
Center-of-Mass det. time= 129.0 min (827.4 - 698.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#2	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#3	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#4	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
#5	42.50'	3,770 cf	**48.0" Round Pipe Storage** L= 300.0' S= 0.0020 '/'
		18,850 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	42.50'	**3.8" Horiz. 1/2 2 yr** C= 0.600 Limited to weir flow at low heads
#2	Primary	45.37'	**12.0" W x 6.6" H Vert. 10ry/25yr** C= 0.600
#3	Primary	46.36'	**15.0" Horiz. Emergency Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.51 cfs @ 9.90 hrs HW=44.29' (Free Discharge)
└─**1=1/2 2 yr** (Orifice Controls 0.51 cfs @ 6.44 fps)
├─**2=10ry/25yr** (Controls 0.00 cfs)
└─**3=Emergency Overflow** (Controls 0.00 cfs)

Pond 21P: 48" Detention Pipes



LITHONIA LIGHTING

Catalog Number	
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — Ideal for car lots, street lighting or parking areas.

CONSTRUCTION — Rugged, .063" thick, aluminum rectilinear housing. Formed for weather-tight seal and integrity. Naturally anodized, extruded aluminum door frame with mitered corners, is retained with two .188" diameter hinge pins and secured with one quarter-turn, quick-release fastener. Weatherproof seal between housing and door frame is accomplished with an integrally designed, extruded silicone gasket that snaps into the door frame, and another gasket applied to the housing.

Finish: Standard finish is dark bronze (DDB), polyester powder finish with other architectural colors available.

OPTICS — Reflectors are anodized and segmented for superior uniformity and control. Reflectors attach with tool-less fasteners and are rotatable and interchangeable. Five cutoff distributions available: Type II (roadway), Type III (asymmetric), Type IV (forward throw, sharp cutoff), Type IV (wide, forward throw), Type V (square). Lens is .125" thick impact-resistant tempered glass with thermally applied silk-screened shield.

ELECTRICAL — Ballast: Constant wattage autotransformer for 250-400W. Super CWA pulse-start ballast required for 320W and 350W (SCWA option). Super CWA (pulse start ballast), 88% efficient and EISA legislation compliant, is required for 250-400W (SCWA option) for U.S. shipments only. CSA or INTL required for probe-start shipments ouside the U.S.

Ballasts are 100% factory-tested.

Socket is porcelain, horizontally mounted mogul base socket with copper alloy, nickel-plated screw shell and center contact. UL listed 1500W-600V.

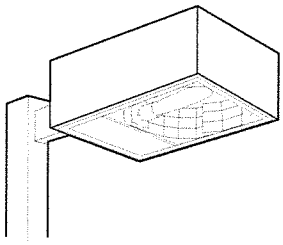
INSTALLATION — Extruded aluminum arm for pole or wall mounting is shipped in fixture carton. Optional mountings available.

LISTING — UL listed (standard). CSA Certified (see Options). NOM Certified (see Options). UL listed for 25°C ambient temperature and wet locations. IP65 rated.

WARRANTY — 1-year limited warranty. Complete warranty terms located at

www.acuitybrands.com/CustomerResources/Terms and conditions.aspx

Note: Specifications subject to change without notice.



Area Lighting

KSF2

METAL HALIDE: 250-400W

HIGH PRESSURE SODIUM: 200-400W

15' to 25' Mounting

Specifications

EPA: 2.0 ft² (.28 m²) (includes arm)

Length: 24-19/32 (62.5)

Width: 17-25/32 (62.5)

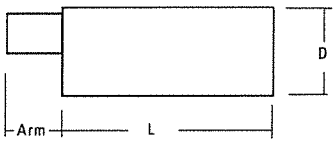
Depth: 8-5/16 (21.1)

Arm: 4 (10.2)

*Weight: 52 lbs (23.6 kg)

*Weight as configured in example below.

All dimensions are inches (centimeters) unless otherwise specified.



Mounting option	Drilling template
SPxx, RPxx, DA12P	5
WBxx, DA12WB	6
WWxx	7

ORDERING INFORMATION For shortest lead times, configure product using **bolded options.**

Example: KSF2 400M R3 TB SCWA SP04 LPI

KSF2								
Series	**Wattage**	**Distribution**	**Voltage**	**Ballast**	**Mounting**			
KSF2	Metal halide **250M**[1] 350M[2,3,4] **320M**[2,3] 400M[1,2] High pressure sodium[5] 200S 400S 250S	R2 Type II roadway **R3** Type III asymmetric **R4SC** Type IV forward throw, sharp cutoff **R4W** Type IV wide, forward throw R5S Type V square	120 **347** **208**[6] **480**[6] 240[6] TB[7] **277** 23050HZ[8]	**(blank)** Magnetic CWI Contant wattage isolated Pulse Start **SCWA** Super CWA pulse-start ballast NOTE: For shipments to U.S. territories, SCWA must be specified to comply with EISA.	Type **SP**__ Square pole RP__ Round pole WB__ Wall bracket WW__ Wood pole or wall bracket	Arm length[9] **04** 4" arm 06 6" arm **09** 9" arm 12 12" arm	Shipped separately DA12P Degree arm, pole DA12WB Degree arm, wall KMA Mast arm adapter KTMB Twin mounting bar	

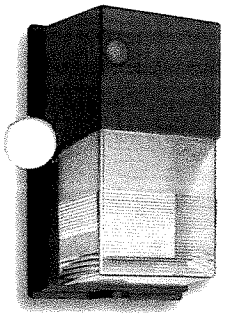
Options			Finish[16]		Lamp[18]
Shipped installed in fixture PER NEMA twist-lock receptacle only (no photocontrol) SF Single fuse (120, 277, 347V) n/a TB[10] DF Double fuse (208, 240, 480V) n/a TB[10] QRS Quartz restrike system[11] QRSTD QRS time delay[8,11]	EC Emergency circuit[11] **CSA** CSA Certified NOM NOM Certified[8] INTL Available for MH probe-start shipping outside the U.S. KW1 KiloWatch® 120V control relay[12] KW4 KiloWatch® 277V control relay[12] REGC1 California Title 20 effective 1/1/2010	Shipped separately[13] PE1 NEMA twist-lock PE (120, 208, 240V) PE3 NEMA twist-lock PE (347V) PE4 NEMA twist-lock PE (480V) PE7 NEMA twist-lock PE (277V) SC Shorting cap for PER option HS House side shield (R2, R3)[14,15] VG Vandal guard[14]	**(blank)** Dark bronze **DWH** White **DBL** Black DMB Medium bronze **DNA** Natural aluminum CRT Non-stick protective coating[17] Super Durable Finishes DDBXD Dark bronze DBLXD Black	DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white	**LPI** Lamp included **L/LP** Less lamp NIGHTTIME FRIENDLY Consistent with LEED® goals & Green Globes™ criteria for light pollution reduction

Accessories: Tenon Mounting Slipfitter
Number of fixtures.

Tenon O.D.	One	Two@180°	Two@90°[19]	Three@120°	Three@90°[19]	Four@90°[19]
2-3/8" (6)	T20-190	T20-280	T20-290	T20-320	T20-390	T20-490
2-7/8" (7.3)	T25-190	T25-280	T25-290	T25-320	T25-390	T25-490
4" (10.2)	T35-190	T35-280	T35-290	T35-320	T35-390	T35-490

Notes

1 These wattages require the REGC1 option to be chosen for shipments into California for Title 20 compliance. 250M REGC1 is not available in 347V or 480V.
2 Use reduced jacketed lamp.
3 Must be ordered with SCWA.
4 These wattages do not comply with California Title 20 regulations.
5 Not available with SCWA.
6 Must specify CWI for use in Canada.
7 Optional multi-tap ballast (120, 208, 240, 277V); (120, 277, 347V in Canada).
8 Consult factory for available wattages.
9 Use 9" arm when two or more luminaires are oriented on a 90° drilling pattern.
10 Must specify voltage. Not available with TB.
11 Maximum allowable wattage lamp included.
12 KiloWatch® controls are available only with 250S or 400S.
13 May be ordered as an accessory.
14 Prefix with KSF2 when ordering as an accessory.
15 Available with R2 and R3 distributions only.
16 See www.lithonia.com/archcolors for additional color options.
17 Black finish only.
18 Must be specified.
19 Must use RP09 or RP12.



TWS LED
LED Wall Luminaire

Catalog Number

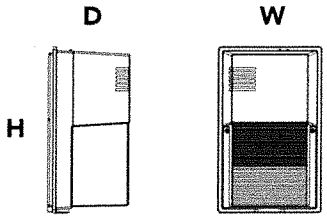
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements

Specifications

Width:	6-3/4" (17.2 cm)
Height:	10-7/8" (27.7 cm)
Depth:	5-5/16" (13.5 cm)
Weight:	3.19 lbs (1.45 kg)



Introduction

The popular TWS luminaire is now available with long-lasting, energy-efficient LED technology. Featuring a classic dayform, the TWS LED offers a traditional appearance and is powered by advanced LEDs.

The TWS LED luminaire is powerful yet energy efficient, capable of replacing up to a 70W HPS wall pack while saving up to 78% in energy costs. With long-life LEDs, the TWS LED eliminates frequent lamp and ballast replacements associated with traditional technologies.

Ordering Information

EXAMPLE: TWS LED 1 50K 120 PE

TWS LED

Series	Performance Package		Color Temperature		Voltage		Control Options		Finish	
TWS LED	1	1017 lumens	50K	5000K [1]	120	120V [2]	PE	Photoelectric cell, button type	(blank)	Dark bronze

Accessories

Ordered and shipped separately

TWSWG Wire Guard

NOTES

1. Corrected color temperature (CCT) shown is nominal per ANSI C78, 377-2008.
2. 120V driver operates on 120V.

FEATURES & SPECIFICATIONS

INTENDED USE
The TWS LED combines traditional wall pack design with high-output LEDs to provide an energy-efficient, low maintenance LED wall pack suitable for replacing up to 70W HPS fixtures. The traditional shape helps maintain building aesthetics when replacing only a portion of your building's wall packs. TWS LED is for outdoor applications such as personnel doors, loading areas, driveways and parking areas.

CONSTRUCTION
Back plate is die-cast aluminum. Front cover is impact-resistant polycarbonate which is fully gasketed. All electronics are protected in the upper housing. Housing is sealed against moisture and environmental contaminants.

FINISH
UV stabilized polycarbonate front cover has dark bronze color which provides superior resistance to corrosion and weathering and that can withstand extreme climate changes without cracking or peeling.

OPTICS
Protective polycarbonate lens covers the LEDs. Prismatic front cover and precision-molded reflector for superior uniformity and fixture spacing. Light engine is available in 5000K (69 min. CRI).

ELECTRICAL
Light engine consists of two high-powered, long-life, high-efficacy LEDs mounted on an internal aluminum heat sink to maximize heat dissipation and promote long life (L95/100,000 hours at 40°C). Driver and integral photocell operate at 120V and are fully enclosed in the upper housing. There are no user serviceable parts.

INSTALLATION
Back housing easily mounts to any recessed junction box. With all electronics in upper housing the open lower section makes wiring easy. Mount on any vertical surface. Not recommended in applications where a sprayed stream of water can come in direct contact with polycarbonate lens.

LISTINGS
UL Certified to US and Canadian safety standards for wet-location mounting higher than 4 feet off the ground.

Rated for -40°C to 40°C ambient temperature.

WARRANTY
Five-year limited warranty. Full warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx.

Note: Specifications are subject to change without notice. Actual performance may differ as a result of end-user environment and application

LITHONIA LIGHTING
One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.279.8041 • Fax: 770.918.1209 • www.lithonia.com
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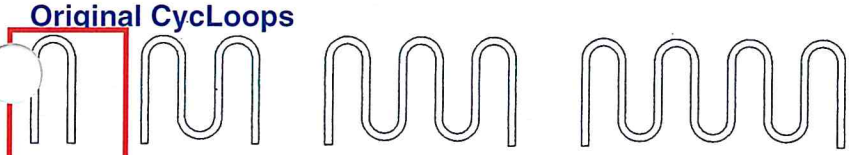
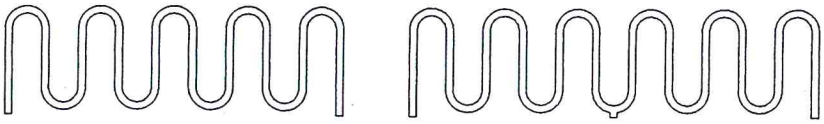
Original CycLoops



2170-3 2170-5 2170-7 2170-9



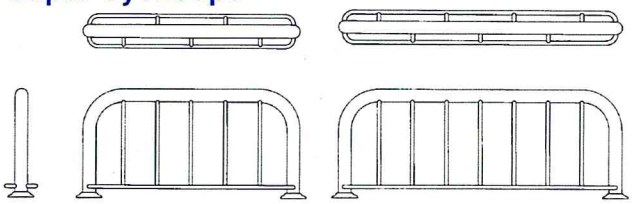
2170-11 2170-13

Original CycLoops Specifications

Model	Length	Width	Height	Maximum Bikes
2170-3	1' 3"	3"	3' 0"	Three
2170-5	3' 3"	3"	3' 0"	Five
2170-7	5' 3"	3"	3' 0"	Seven
2170-9	7' 3"	3"	3' 0"	Nine
2170-11	9' 3"	3"	3' 0"	Eleven
2170-13	11' 3"	3"	3' 0"	Thirteen

Supplied as standard for embedment (permanent) mounting.
-P Suffix for pedestal (fixed surface) mounting option.
-C Suffix for powder-coated steel version.
-G Suffix for galvanized version.
-S Suffix for stainless steel version.
Notes: Includes matching base covers on **-P** pedestal mounting option only.

Super CycLoops



2175-8 2175-10

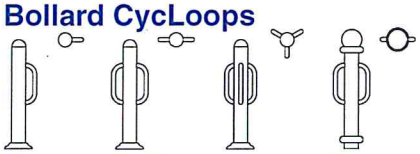
Super CycLoops Specifications

Model	Length	Width	Height	Maximum Bikes
2175-8	6' 5"	1' 0"	3' 3"	Eight
2175-10	8' 5"	1' 0"	3' 3"	Ten

-E Suffix for embedment (permanent) mounting option.
-P Suffix for pedestal (fixed surface) mounting option.
-C Suffix for powder-coated steel version.
-G Suffix for galvanized version.
-S Suffix for stainless steel version.
Notes: Includes matching base covers, as shown, on **-P** pedestal mounting option only.

POWDER COATED TOUGH™

Bollard CycLoops



2171 2172 2173 2172-01

Bollard CycLoops Specifications

Model	Length	Width	Height	Maximum Bikes
2171	9"	5"	3' 0"	One
2172	12"	5"	3' 0"	Two
2173	11"	10"	3' 0"	Three
2172-01	12"	8"	3' 3"	Two

-E Suffix for embedment (permanent) mounting option.
-P Suffix for pedestal (fixed surface) mounting option.
-R Suffix for removable mounting option.
-C Suffix for powder-coated steel version.
-G Suffix for galvanized version. (n/a 2172-01)
-S Suffix for stainless steel version. (n/a 2172-01)
Notes: Includes matching base cover, on **-P** pedestal mounting option only.

Wall CycLoops

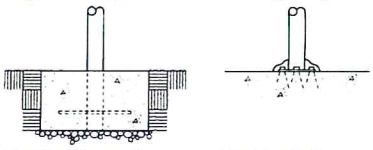
2174

Wall CycLoops Specifications

Model	Length	Width	Height	Maximum Bikes
2174	1' 2"	2"	4"	One

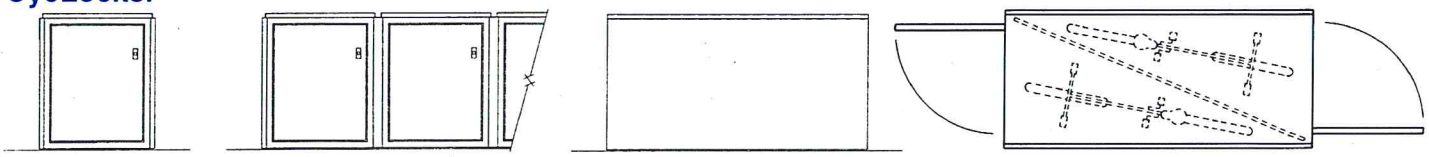
-C Suffix for powder-coated steel version.
-G Suffix for galvanized version.
-S Suffix for stainless steel version.
Notes: Wall mounting bolts by others.

CycLoops Mounting Options



Embedment **Pedestal**
(re-bar and anchoring bolts not included)

CycLocker



2176-2 **Multiple Unit** **Side Elevation** **Cutaway Plan-view**

CycLocker Specifications

Model	Length	w/Doors Open	Width	Height	Maximum Bikes
2176-2	7' 4"	12' 7"	3' 3"	3' 10"	Two
2176-4	7' 4"	12' 7"	6' 6"	3' 10"	Four
2176-6	7' 4"	12' 7"	9' 9"	3' 10"	Six
2176-8	7' 4"	12' 7"	13' 0"	3' 10"	Eight
2176-10	7' 4"	12' 7"	16' 3"	3' 10"	Ten
2176-12	7' 4"	12' 7"	19' 6"	3' 10"	Twelve

-C Suffix for powder-coated steel version (standard).
-S Suffix for stainless steel version.
Four bolt-down, leveling feet are supplied with each locker.
Factory installed dual-latch lock on each door is included.
Interior manual safety lock release.

Ten CASPAX-7™ Standard Powder-Coating Colors

Choose from these standard hues or from a wide spectrum of nearly 200 special designer colors.

Regal Blue *Evergreen* *Red* *Brown* *Black*

Chrome Yellow *Ocean Teal* *Burgundy* *Coffee Tan* *White*

Due to variations in the printing process the colors shown above are only a guide to the actual powder-coating colors.