AGENDA

MILWAUKIE PLANNING COMMISSION
Tuesday, June 25, 2013, 6:30 PM

MILWAUKIE CITY HALL
10722 SE MAIN STREET

1.0 Call to Order - Procedural Matters

2.0 Planning Commission Minutes – Motion Needed

2.1 February 26, 2013

3.0 Information Items

4.0 Audience Participation – This is an opportunity for the public to comment on any item not on the agenda

5.0 Public Hearings – Public hearings will follow the procedure listed on reverse

5.1 Summary: Setback Variance
Applicant/Owner: Ron Woodruff/Perry Nordby
Address: 9925 SE 37th Ave
File: VR-12-05
Staff: Li Alligood

5.2 Summary: Stormwater Master Plan
Applicant: City of Milwaukie
File: CPA-13-02
Staff: Li Alligood/Brad Albert

6.0 Worksession Items

7.0 Planning Department Other Business/Updates

8.0 Planning Commission Discussion Items – This is an opportunity for comment or discussion for items not on the agenda.

9.0 Forecast for Future Meetings:

July 9, 2013	1. Public Hearing: CPA-13-02 Stormwater Master Plan *(continued tentative)*
July 23, 2013	1. Worksession: Transportation System Plan (TSP) Update project briefing

Milwaukie Planning Commission Statement

The Planning Commission serves as an advisory body to, and a resource for, the City Council in land use matters. In this capacity, the mission of the Planning Commission is to articulate the Community's values and commitment to socially and environmentally responsible uses of its resources as reflected in the Comprehensive Plan

1. **PROCEDURAL MATTERS.** If you wish to speak at this meeting, please fill out a yellow card and give to planning staff. Please turn off all personal communication devices during meeting. For background information on agenda items, call the Planning Department at 503-786-7600 or email planning@ci.milwaukie.or.us. Thank You.

2. **PLANNING COMMISSION MINUTES.** Approved PC Minutes can be found on the City website at www.cityofmilwaukie.org

3. **CITY COUNCIL MINUTES** City Council Minutes can be found on the City website at www.cityofmilwaukie.org

4. **FORECAST FOR FUTURE MEETING.** These items are tentatively scheduled, but may be rescheduled prior to the meeting date. Please contact staff with any questions you may have.

5. **TIME LIMIT POLICY.** The Commission intends to end each meeting by 10:00pm. The Planning Commission will pause discussion of agenda items at 9:45pm to discuss whether to continue the agenda item to a future date or finish the agenda item.

Public Hearing Procedure

Those who wish to testify should come to the front podium, state his or her name and address for the record, and remain at the podium until the Chairperson has asked if there are any questions from the Commissioners.

1. **STAFF REPORT.** Each hearing starts with a brief review of the staff report by staff. The report lists the criteria for the land use action being considered, as well as a recommended decision with reasons for that recommendation.

2. **CORRESPONDENCE.** Staff will report any verbal or written correspondence that has been received since the Commission was presented with its meeting packet.

3. **APPLICANT'S PRESENTATION.**

4. **PUBLIC TESTIMONY IN SUPPORT.** Testimony from those in favor of the application.

5. **NEUTRAL PUBLIC TESTIMONY.** Comments or questions from interested persons who are neither in favor of nor opposed to the application.

6. **PUBLIC TESTIMONY IN OPPOSITION.** Testimony from those in opposition to the application.

7. **QUESTIONS FROM COMMISSIONERS.** The commission will have the opportunity to ask for clarification from staff, the applicant, or those who have already testified.

8. **REBUTTAL TESTIMONY FROM APPLICANT.** After all public testimony, the commission will take rebuttal testimony from the applicant.

9. **CLOSING OF PUBLIC HEARING.** The Chairperson will close the public portion of the hearing. The Commission will then enter into deliberation. From this point in the hearing the Commission will not receive any additional testimony from the audience, but may ask questions of anyone who has testified.

10. **COMMISSION DISCUSSION AND ACTION.** It is the Commission's intention to make a decision this evening on each issue on the agenda. Planning Commission decisions may be appealed to the City Council. If you wish to appeal a decision, please contact the Planning Department for information on the procedures and fees involved.

11. **MEETING CONTINUANCE.** Prior to the close of the first public hearing, *any person* may request an opportunity to present additional information at another time. If there is such a request, the Planning Commission will either continue the public hearing to a date certain, or leave the record open for at least seven days for additional written evidence, argument, or testimony. The Planning Commission may ask the applicant to consider granting an extension of the 120-day time period for making a decision if a delay in making a decision could impact the ability of the City to take final action on the application, including resolution of all local appeals.

The City of Milwaukie will make reasonable accommodation for people with disabilities. Please notify us no less than five (5) business days prior to the meeting.

Milwaukie Planning Commission:

Lisa Batey, Chair
Clare Fuchs, Vice Chair
Scott Barbur
Sine Bone
Shaun Lowcock
Wilda Parks
Gabe Storm

Planning Department Staff:

Steve Butler, Planning Director
Ryan Marquardt, Senior Planner
Li Alligood, Associate Planner
Brett Kelver, Associate Planner
Kari Svanstrom, Associate Planner
Alicia Martin, Administrative Specialist II

CITY OF MILWAUKIE
PLANNING COMMISSION
MINUTES
Milwaukie City Hall
10722 SE Main Street
TUESDAY, FEBRUARY 26, 2013
6:30 PM

COMMISSIONERS PRESENT
Lisa Batey, Chair
Clare Fuchs, Vice Chair
Sine Adams
Shaun Lowcock
Wilda Parks
Gabe Storm

STAFF PRESENT
Ryan Marquardt, Senior Planner
Kari Svanstrom, Associate Planner
Damien Hall, City Attorney

COMMISSIONERS ABSENT
Chris Wilson

1.0 Call to Order – Procedural Matters*
Chair Batey called the meeting to order at 6:30 p.m. and read the conduct of meeting format into the record.

***Note**: The information presented constitutes summarized minutes only. The meeting video is available by clicking the Video link at http://www.ci.milwaukie.or.us/meetings.*

2.0 Planning Commission Minutes
2.1 January 8, 2013

It was moved by Commissioner Parks and seconded by Commissioner Adams to approve the January 8, 2013, Planning Commission minutes as presented. The motion passed unanimously.

3.0 Information Items
There were no information items.

4.0 Audience Participation –This is an opportunity for the public to comment on any item not on the agenda. There was none.

5.0 Public Hearings
5.1 Summary: Veterinary Clinic in Clackamas Federal Credit Union
Applicant/Owner: Mahlum Architects/Clackamas Federal Credit Union
Address: 10400 SE Main St
File: NCU-13-01
Staff: Kari Svanstrom

Chair Batey called the hearing to order.

Kari Svanstrom, Associate Planner, presented the staff report via PowerPoint. The applicant was requesting replacement of one nonconforming use with another and noted the application met the criteria for nonconforming uses. The site was located in the Downtown Residential Zone

in the Historic Milwaukie neighborhood. Natural resource issues would be reviewed when the applicant submitted a separate application for building expansion.

Ms. Svanstrom noted staff recommended approval with conditions to ensure that the new use was no more detrimental in the Downtown Residential Zone than the current use.

Eric Goodfriend, Mahlum Architects, 1231 NW Hoyt #102, Portland OR 97205, presented the application for the veterinary clinic applicants and summarized the proposal.

Kim Freeman, Veterinarian Oncologist, said that there were currently 3 doctors planning to form a cancer specialty veterinary clinic.

Chair Batey asked what, if any, effort CFCU made to find another financial institution, noting the code favored replacing nonconforming uses with the same kind of nonconforming uses.

Andrew Verencamp, Chief Financial Officer, Clackamas Federal Credit Union (CFCU) said that they had not and explained that the branch hadn't been profitable for several years. They felt that a veterinary use would be a nice addition to downtown.

Dion Shepard, Co-Chair and Land Use Committee member, Historic Milwaukie NDA, testified in favor of the proposed veterinary clinic.

Jean Baker, Co-Chair and Land Use Committee member, Historic Milwaukie NDA, also testified in favor of the use.

Commissioner Storm asked staff about the reasons for the conditions about overnight accommodations and number of animals outside at a time.

Ms. Svanstrom said the conditions related to the requirement for a new nonconforming use to be no more detrimental than the existing use. Those conditions were also in keeping with the applicant's plans—they were not proposing an overnight facility.

Chair Batey closed public testimony and the **Commission** began deliberation. They felt the clinic would be a great asset to the community and encouraged some flexibility with the conditions.

The Commission directed the following changes to the proposed Conditions:

- Condition 1.a: "Clinic hours (open to the public) shall be within the times of 8:00 a.m. to 6:00 p.m. Variations for special evening events, no later than 10:00 p.m. and no more than once a month, are excepted from this requirement. Overnight care of patients by staff is allowed."
- Condition 1.b: "No kenneling of animals shall be provided ~~or overnight accommodation~~."
- Condition 1.d: Second sentence added to say, "No more than 4 animals at any one time."

It was moved by Commissioner Parks and seconded by Commissioner Lowcock to approve NCU-13-01, Veterinary Clinic in Clackamas Federal Credit Union, with amendments to the conditions of approval as discussed. The motion passed unanimously.

6.0 Worksession Items—None.

7.0 Planning Department Other Business/Updates

7.1 Summary: Draft 2013 Planning Commission Work Plan discussion
Staff: Steve Butler

Mr. Marquardt said that the 2012 work plan had been included in their packet for the discussion of the 2013 work plan. The joint session with Council would be on May 7, 2013.

7.1 Summary: Adams St Connector Programming meetings
Staff: Kari Svanstrom

Mr. Marquardt and Ms. Svanstrom noted there would be an open house at the Pond House on Thursday, February 28, 2013, from 5:00 to 6:00 p.m., followed by a presentation and discussion from 6:00 to 7:00 p.m. Staff would be presenting the current design and requesting community feedback on the types of programs that could occur in the space.

Chair Batey encouraged people to participate.

8.0 Planning Commission Discussion Items—None.

9.0 Forecast for Future Meetings:
March 12, 2013

It was moved by Vice Chair Fuchs and seconded by Commissioner Adams to cancel the March 12, 2013, meeting. Motion passed unanimously.

March 19, 2013 1. Joint Session with City Council postponed to May 7

March 26, 2013 1. Worksession: Stormwater Master Plan

Chair Batey asked the status of the Downtown code amendments.

Mr. Marquardt reported that those were adopted 4-1 by City Council on February 19, 2013, and would be effective on March 21, 2013.

Meeting adjourned at approximately 7:33 p.m.

Respectfully submitted,

Marcia Hamley, Administrative Specialist II

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Lisa Batey, Chair

MILWAUKIE
Dogwood City of the West

To: **Planning Commission**

Through: **Stephen Butler, Interim Community Development Director/Planning Director**

From: **Li Alligood, Associate Planner**

Date: **June 11, 2013, for June 25, 2013, Public Hearing**

Subject: **File:** VR-12-05

Applicant: Ron Woodruff

Owner(s): Perry Nordby

Address: 9925 SE 37th Ave

Legal Description (Map & Taxlot): 11E25DC00100

NDA: Ardenwald-Johnson Creek

ACTION REQUESTED

Deny the application for a variance for the property at 9925 SE 37th Ave to allow additions to a single family dwelling to encroach into required yard depths. See Attachment 5, Recommended Findings.

Staff is making this recommendation because the applicant's materials do not adequately address the application requirements for a Type III variance application, including lack of an alternatives analysis and insufficiently addressing the approval criteria. These are described more in detail in this report.

Staff is amenable to reconsidering this recommendation if the applicant provides additional information to adequately address the deficiencies the application. If the applicant wishes to provide more information for reevaluation of the proposal, they must grant a waiver to the 120-day clock.

BACKGROUND INFORMATION

A. Application Status

The role of City staff is to act as a facilitator of land use applications. Staff provides technical assistance and information related to the application submittal requirements, applicable standards, approval criteria, review process, fees, public notice sign requirements, and areas of weakness in the application or issues that may prevent a favorable recommendation.

The burden of submitting the required materials, acquiring the necessary information and analysis, and providing a basis for recommendation lies on the applicant. In this case, staff believes the applicant has not provided sufficient information to prepare recommendations for Commission consideration.

B. Process to Date

Staff has had numerous communications with the applicant.

- *October 20, 2011*: Staff held a pre-application conference with the applicant and the property owner. At that meeting, staff suggested several alternatives to expanding the garage to the north, which would require a Type III Variance Review application.
- *June 7, 2012:* The applicant submitted a building permit for the addition of a porch to the eastern façade and expansion of the dining room and garage eaves. Staff informed the applicant that a Type III Variance Review application would be required to demolish the existing roof and reconstruct it with extended eaves.
- *August 3, 2012:* Staff approved a revised plan set, which permitted the construction of the porch but did not approve the demolition and reconstruction of the existing roof and extension of the eaves. Staff requested the relocation of an accessory structure from within the street side yard setback to another location on site.
- *October 18, 2012:* The applicant submitted a land use application (File #VR-12-05) requesting variances to the street side yard setback in order to demolish and reconstruct the roof and extend the eaves on the north side of the house. The application was deemed incomplete on October 26, 2012 (see Attachment 1a).
- *April 16, 2013:* On the day the application was to become void (see Section C), the applicant submitted additional materials, including a revised narrative, and requested that the application be deemed complete (see Attachment 2a). The application was deemed complete on April 16, 2013.
- *May 23, 2013:* Staff determined that the materials submitted on April 16 did not address all of the completeness items, and did not provide enough information to make a recommendation or draft findings. Staff requested additional information from the applicant in order to support a recommendation (see Attachment 2b).
- *June 3, 2013:* The applicant provided additional materials to clarify staff's questions (see Attachment 2c).
- *June 11, 2013:* Staff contacted the applicant to request clarification regarding the proposed expansion of the garage footprint and/or eaves, and alerting the applicant to the fact that the variance application contained more than the three variance requests permitted by the code. As of this writing, staff has not received a response.

C. Completeness vs. Approvability

Each land use application is reviewed for "completeness" after it is submitted. A complete application includes all of the items listed on the Submittal Requirements Form.

Per State law, the application must be deemed "complete" or "incomplete" within 30 days of submittal. The application for VR-12-05 did not contain all of the required application materials and was deemed incomplete on October 26, 2012.

Per MMC Subsection 19.1003.3.F, the City **must** deem the application complete when one of the following is submitted:

1. All of the missing information.
2. Some of the missing information and written notice from the applicant that no other information will be provided.
3. Written notice from the applicant that none of the missing information will be provided.

If an applicant selects options 2 or 3, the City must deem the application complete regardless of whether it is actually complete, and/or includes sufficient information to draft recommendations for Commission consideration.

Per State law, an application becomes void 180 days after it is deemed incomplete. The expiration date of VR-12-05 was April 16, 2013. On that date, the applicant submitted additional information and requested that the application be deemed complete. The application was deemed complete that same day, and the application remained active.

Determination that an application is complete indicates only that the application contains the information necessary to review it for compliance against applicable development standards and approval criteria. It does not mean that the application does demonstrate compliance with those standards or meets the approval criteria.

While preparing the staff report and recommendations for the Planning Commission hearing on the application, staff discovered that an additional variance request had been added to the narrative, and determined that the applicant's materials did not provide enough information or analysis to support approval for any of the requested variances. On May 23, 2013, staff requested additional information and identified specific areas of deficiency. The applicant responded with additional information but did not satisfactorily address either the approval criteria or the request for information.

D. Site and Vicinity

The subject property is a residential lot zoned Residential R-7 in the Ardenwald-Johnson Creek neighborhood. The property is located at the southwest corner of Harvey St and 37th Ave. The property is approximately 9,780 sq ft in area and is developed with a single-family detached dwelling with attached garage built in 1942, prior to the adoption of the City's first zoning ordinance. A family room was added in 1966,[1] and a bathroom was added in 1967.[2]

[1] Milwaukie Building Permit #2865
[2] Milwaukie Building Permit #3082

The property is subject to the street side yard setback requirements of the R-7 zone and the additional yard requirements that are applicable on Harvey St between 32nd and 42nd Aves.[3]

The existing dwelling is set back 35 ft from the western property line, approximately 20 ft from the southern property line; and between 15.7 ft and 18.2 ft from Harvey St, and is nonconforming in regards to the required street side yard setback of 25 ft.

The property includes concrete slabs to the west and south of the existing garage, and a detached shed in the southwest corner of the lot. The surrounding properties are developed with single-family detached dwellings.

E. Zoning Designation

Residential zone R-7

F. Comprehensive Plan Designation

Low Density Residential LD

G. Land Use History

City records indicate no previous land use actions for this site.

H. Proposal

The applicant is seeking land use approvals for variances to the required street side yard setback and rear yard setbacks of the R-7 zone. See Attachments 2a-b – Applicant's Narrative for details.

The proposal currently includes the following:

1. 50% Variance to the required street side yard setback to permit a 3 ft extension of the garage footprint and 2.5 ft extension of the gable roof overhang (eaves) on the northern façade of the house (see Attachment 2d).
2. If Request # 1is not supportable: 43% variance to extend the gable roof overhang by 4 ft and leave the garage footprint as-is (see Attachment 2e).
3. 47% variance to street side yard setback to extend the roof gable overhang (eaves) on the north side of the house by 20 in (see Attachment 2e and Exhibits 4, 6, and 7).
4. 20% variance to the street side yard setback to permit construction of a 342 sq ft covered patio area (see Attachment 2f and Exhibits 9-12).
5. 10% variance to the rear yard setback to permit construction of a 342 sq ft covered patio area (see Attachment 2f and Exhibits 9-12).

The proposal requires approval of the following applications:

1. Type III Variance Review: Variances of more than 25% of the street side yard setback, or which reduce the setback to less than 15 ft, are subject to Type III review. Requests 1-3 are subject to Type III review.

[3] Per MMC Table 19.501.2.A, properties along this section of Harvey St are subject to an additional setback of 25 ft from the centerline of Harvey St.

Requests 4-5 could be processed through Type II review. However, per MMC 19.911.3, if one or more of the variance requests is Type III, the application will be processed through a Type III review. Because the requests 4-5 were submitted with the Type III request, the application is being processed through Type III review.

KEY ISSUES

Summary

Staff has identified the following key issues for the Planning Commission's consideration.

A. Can the Planning Commission consider all of the Variance Requests under one application?

B. Has the applicant sufficiently addressed the approval criteria?

Analysis

A. Can the Planning Commission consider all of the Variance Requests under one application?

Per MMC 19.911.3.A.3, one variance application may include up to three variance requests. It appears that this application includes five variance requests. The requests were submitted incrementally, which led to the current situation. The timeline is described below.

The applicant submitted a Variance Review application (VR-12-05) on October 18, 2012. The application included a request for two variances:

1. Two options/requests
    A. Variance to the street side yard setback to permit a 3 ft expansion of the garage footprint and a 30” extension of the garage eaves
    B. If 1(A) is not supportable: 48” extension of the garage eaves, leaving the garage footprint as-is.
2. Variance to the street side yard setback to extend the eaves of the dining room by 30”.

It is unclear whether Requests 1(A) and 1(A) were intended to be considered and evaluated simultaneously, or if the applicant was indicating that he would be satisfied with 1(B), if 1(A) was not supportable.

The narrative and materials submitted on April 16, 2013, included requests for two additional variances (identified by the applicant as Request #3):

3. Variance to the street side yard setback to permit construction of a covered patio.
4. Variance to the rear side yard setback to permit construction of a covered patio.

Staff is seeking direction on how to approach and process these requests. Staff has identified two potential approaches:

- Collect an additional fee for Type II Variance Review application and remove the covered patio variance requests from this application; or

- Combine the variances into two variances: one street side yard setback variance with various project components; and one rear yard setback variance.

Neither of these approaches would resolve the question of which variance should be considered for the garage footprint and/or eave expansion.

B. Has the applicant sufficiently addressed the approval criteria?

The Variance Review approval criteria are found in MMC 19.911.4; Table 1 provides a comparison of the approval criteria for Type II and Type III variances.

Table 1 – Comparison of Type II and Type III variance approval criteria

Type II Approval Criteria	Type III Approval Criteria
An application for a Type II variance shall be approved when all of the following criteria have been met:	An application for a Type III variance shall be approved when all of the criteria in either Subsection 19.911.4.B.1 or 2 have been met. (The applicant chose to address the criteria of 19.911.4.B.1):
1. The proposed variance, or cumulative effect of multiple variances, will not be detrimental to surrounding properties, natural resource areas, or public health, safety, or welfare.	1. Discretionary Relief Criteria
2. The proposed variance will not interfere with planned future improvements to any public transportation facility or utility identified in an officially adopted plan such as the Transportation System Plan or Water Master Plan.	A. The applicant's alternatives analysis provides, at a minimum, an analysis of the impacts and benefits of the variance proposal as compared to the baseline code requirements.
3. Where site improvements already exist, the proposed variance will sustain the integrity of, or enhance, an existing building or site design.	B. The proposed variance is determined by the Planning Commission to be both reasonable and appropriate, and it meets one or more of the following criteria: (1) The proposed variance avoids or minimizes impacts to surrounding properties. (2) The proposed variance has desirable public benefits. (3) The proposed variance responds to the existing built or natural environment in a creative and sensitive manner.
4. Impacts from the proposed variance will be mitigated to the extent practicable.	C. Impacts from the proposed variance will be mitigated to the extent practicable.

Though the Type II and Type III Variance Review criteria are similar, they are different in one critical way - Type III review is discretionary, which means that the Planning Commission may determine if, and how, the criteria have been met; Type II review is processed administratively, and is much less discretionary.

Under the Type III process, to assist staff and the Commission with the evaluation of the application, the applicant is required to submit an alternatives analysis. This analysis is intended to compare the proposal against what would be allowed by right, without a variance. This analysis allows staff, the public, and the Commission to review the standards of the zone and determine whether the request will have the same impacts and/or benefits as development that would not require relief.

Staff identified several deficiencies in the application:

- The applicable baseline requirements are the setback standards of the Residential Zone R-7, and the additional yard requirements applicable to this section of Harvey St. The applicant did not provide an analysis of the impacts and benefits of the proposal as compared to the R-7 zone requirements or the additional yard requirements, nor a discussion of how the variance request would further the intent of those regulations.
- In some cases, the applicant did not address the correct approval criteria, or the response was incomplete.
- In other cases, the applicant did not address the approval criteria at all.

While the applicant has provided some information and analysis of the requested variances, staff believes additional information is required. Staff is not making any indication as to the approvability of the variances *per se* at this time, and is asserting only that the application materials have not sufficiently demonstrated compliance with the approval criteria.

CONCLUSIONS

A. Staff recommendation to the Planning Commission is as follows:

Deny the application for a variance for the property at 9925 SE 37th Ave to allow additions to a single family dwelling to encroach into required yard depths.

Staff is amenable to reconsidering this recommendation if the applicant provides additional information to adequately address the deficiencies the application. If the applicant wishes to provide more information for reevaluation of the proposal, they must grant a waiver to the 120-day clock.

CODE AUTHORITY AND DECISION-MAKING PROCESS

The proposal is subject to the following provisions of the Milwaukie Municipal Code (MMC).[4]

[4] The application was submitted on October 18, 2012, prior to the effective date of Ordinance #2051, which repealed the residential zones R-5, R-7, and R-10 (MMC 19.301-303) and replaced them with MMC 19.301 Low Density Residential Zones; and expanded the design standards for new single-family dwellings and established applicability for additions to street-facing facades. Per MMC 19.1001.7.B, the application is subject to the standards and criteria in place at the time of original submittal.

- MMC Section 19.302 Residential Zone R-7
- MMC Section 19.501.2 Yard Exceptions
- MMC Chapter 19.800 Nonconforming Uses and Development
- MMC Section 19.911 Variances
- MMC Section 19.1006 Type III Review

This application is subject to Type III review, which requires the Planning Commission to consider whether the applicant has demonstrated compliance with the code sections shown above. In Type III reviews, the Commission assesses the application against review criteria and development standards and evaluates testimony and evidence received at the public hearing.

The Commission has the following decision-making options as follows:

A. Deny the application upon finding that compliance with the approval criteria has not been demonstrated.

B. Continue the hearing to July 23, 2013 or later. Staff requests continuation to a date certain to avoid costs associated with sending another 20-day hearing notice. This option requires that the applicant provide a waiver to the 120-day clock. This option is dependent on the applicant providing a waiver to the 120-day clock. Staff does not anticipate being able to review revised materials and prepare new findings in time for the July 9, 2013 meeting.

C. Approve the application upon finding that the submitted materials do demonstrate compliance with the approval criteria. Staff does not believe that the applicant has provided enough information to support this option, and staff would need direction from the Planning Commission regarding findings to support this option.

The final decision on these applications, which includes any appeals to the City Council, must be made by August 14, 2013, in accordance with the Oregon Revised Statutes and the Milwaukie Zoning Ordinance. The applicant can waive the time period in which the application must be decided.

COMMENTS

Notice of the proposed changes was given to the following agencies and persons: City of Milwaukie Building and Engineering, Ardenwald-Johnson Creek Neighborhood District Association (NDA), and Clackamas County Fire District #1. The following is a summary of the comments received by the City. See Attachment 3 for further details.

- **Tom Larsen, Building Official:** No comments.
- **Shawn Olson, Clackamas Fire District #1:** No comments regarding access and water supply.
- **Brad Albert, Civil Engineer**: Concerns about impacts of expansion of the garage to the north re: increased slope of driveway and approach, which could render the existing garage difficult to access.

ATTACHMENTS

Attachments are provided as indicated by the checked boxes. All material is available for viewing upon request.

		Early PC Mailing	PC Packet	Public Copies	E-Packet
1.	Background Information				
	a. Incompleteness Letter, dated October 26, 2012	☐	☒	☒	☒
2.	Applicant's Narrative and Supporting Documentation dated October 18, 2012; April 16, 2013; and June 3, 2013.				
	a. Revised narrative, dated April 16, 2013	☒	☒	☒	☒
	b. E-mail from Li Alligood, Associate Planner, to Ron Woodruff, Applicant, dated May 23, 2013	☐	☒	☒	☒
	c. Response to May 23 clarification of Type III Variance info, dated June 3, 2013	☐	☒	☒	☒
	d. Exhibit 2 - Site Plan, Request #1(A), dated April 16, 2013	☒	☒	☒	☒
	e Exhibit 2 - Site Plan, Request #1(B), dated April 16, 2013	☒	☒	☒	☒
	f. Exhibit 2 -Site Plan, Request #3, dated April 16, 2013	☒	☒	☒	☒
	g. Exhibits 3-8, dated October 18, 2012	☒	☒	☒	☒
	h. Exhibits 9-12, dated April 16, 2013	☒	☒	☒	☒
3.	Comments Received	☐	☒	☒	☒
4.	List of Record	☐	☐	☐	☐
5.	Recommended Findings	☐	☒	☒	☒

Key:

Early PC Mailing = paper materials provided to Planning Commission at the time of public notice 20 days prior to the hearing.

PC Packet = paper materials provided to Planning Commission 7 days prior to the hearing.

Public Copies = paper copies of the packet available for review at City facilities and at the Planning Commission meeting.

E-Packet = packet materials available online at http://www.ci.milwaukie.or.us/planning/planning-commission-83.

ATTACHMENT 1

October 30, 2012

Ron Woodruff
1225 SE Mall St
Portland, OR 97202

File: Variance, VR-12-05
Site: 9925 SE 37th Ave, Milwaukie, OR 97206
Re: **Revised Incompleteness Letter**

Dear Mr. Woodruff:

Please be advised that the above-referenced application submitted on **October 18, 2012,** has been deemed incomplete pursuant to Milwaukie Municipal Code (MMC) Section 19.1003.3 and Oregon Revised Statutes 227.178. The time period in which the City must take final action is suspended pending resolution of the items listed below.

If you would like to reuse portions of your recently submitted application by replacing affected pages and/or adding new pages, I can make them available to you upon request.

I. Completeness Items

The following items were found to be incomplete or missing in your application:

1. *Submittal Requirements*
   - A. Item #3: Provide detailed and comprehensive description of all existing and proposed uses and structures.
   - B. Item #4: Provide a **Detailed Statement** that demonstrates how the proposal meets all applicable application-specific approval criteria and all applicable development standards other than the variance being requested. Sections to address include:
     - a. Application specific approval for Type III Variance:
       1. Variance Request #1 does not address MMC 19.911.4.B.1.a: The applicant's alternatives analysis provides, at a minimum, an analysis of the impacts and benefits of the variance proposal as compared to the baseline code requirements.
       2. Note that Variance Request #1, Response #4 addresses Type III criteria B.1.c.

3. Variance Request #1 does not address MMC 19.911.4.B.1.b.2: The proposed variance avoids or minimizes impacts to surrounding properties.
4. Variance Request #1, Item B references Exhibit #2. I believe this should reference Exhibit #1.
5. Variance Request #2 does not address MMC 19.911.4.B.1.a: The applicant's alternatives analysis provides, at a minimum, an analysis of the impacts and benefits of the variance proposal as compared to the baseline code requirements.
6. Variance Request #2 has not addressed MMC 19.911.4.B.1.c: Impacts from the proposed variance will be mitigated to the extent practicable.

b. Item 4a.: **Base zone standards** for R-7 zone. Address requirements of MMC 19.302.3 (Items A through I are applicable to this project).

c. Item 4c: **Supplemental development regulations** applicable to the projects: MMC 19.504.1 and 19.504.7.

d. Item 4d: **Off-street parking and loading standards and requirements** outlined in MMC 19.607.1.

C. Item #5: **Site Plan** is missing some required elements. Although this information may have been submitted as part of a previous building permit application, it must also be submitted for this land use application. Provide the following items:

a. **Existing Conditions Plan** (Exhibits 1 and 2) should include:

1. **Boundaries.** Include centerline of Harvey Street on site plan. Include overall lot dimensions, distance from curb to property line on both street sides.
2. **Site Improvements.** Several property and site improvements are not included on the drawing (river rock wall east side of driveway, fence, rear patio, storage sheds, etc.). Dimensions from property lines are not shown.
3. **Parking Improvements.** Identify size and location of required parking space on property (even if in existing garage), including dimensions.
4. **Right-of-Way Improvements.** Show and identify extent of existing curb, power poles and lines, etc.
5. **Natural Resources and Drainages.** Identify location, size, and type of all trees greater than 6-in diameter at breast height.
6. **Topography.** Topographic contours at no more than a 2-ft vertical interval.

b. **Location Plan** drawn to an appropriate scale (no larger than 8½ x 11 in.) and showing nearest cross streets and location of buildings, parking areas, and driveways on adjacent lots. (This will show the setbacks in relation to adjacent properties).

c. **Lot Coverage and Vegetation Calculations** showing how lot coverage and minimum vegetation areas were determined. Lot coverage and vegetation worksheets are available at www.ci.milwaukie.or.us/forms/.

D. Item #6: **Pre-application conference report** has not been included per submittal requirements. Please provide (17) copies of this report (per requirements listed in Section IV below).

II. Approvability Items

The following items are approvability items, not completeness items. They are listed here for your information and should be resolved at the beginning of the review process so that staff has sufficient time to analyze your proposal and formulate a recommendation with regard to approvability.

1. For Variance Request #1, Option #1, you should explain in the narrative why the garage cannot be extended to the south side (which would allow for the additional garage length without a variance for this item).

III. Informational Items

The following items are approvability items, not completeness items. They are listed here for your information and should be resolved at the beginning of the review process so that staff has sufficient time to analyze your proposal and formulate a recommendation with regard to approvability.

1. In addressing Completeness Item #1A: The narrative is an opportunity to make your overall argument of the benefits of the project to the neighborhood. Describing other improvements being made to the property that meet the City's Development Standards may help your application.

2. In addressing the Variance Criteria, if you feel there are no impacts that require mitigation as noted in your Pre-application Conference notes, you may state that in response to the criteria.

3. Within 7 days after the application has been deemed complete, the applicant must post notice of the application on the property. The sign notice shall meet the requirements of MMC Subsection 1001.6.C.1.b and shall remain continuously posted until the decision is issued. The City will provide 2 signs for your use. The city's zoning ordinance is available online at http://www.qcode.us/codes/milwaukie/.

IV. Summary

This letter contains the completeness review for both the City Planning and Engineering Departments.

Please be advised that no further action will be taken on your application until one of the following events occurs: (1) you submit all completeness items, (2) you submit some completeness items and request that the City deem your application complete, or (3) you submit no completeness items and request that the City deem your application complete. In any of these three instances, we will need **17 copies** of your application to be able to begin the referral and review process. Once your application is deemed complete, staff will review your application for approvability.

Per ORS 227.178, your application will be void if one of the three actions listed above is not taken within 180 days of the date you submitted your application. The date on which your application would become void is ~~**March 12, 2013**~~ **April 16, 2013**. Please be aware

that application fees are non-refundable. If an application becomes void, the City may retain some or all of the related deposits.

If you feel that we have made an error in our assessment of completeness, please notify us immediately so that we may resolve the issue. If you have any questions or concerns, you can call me at **(503) 786-7653** or email me at **svanstromk@ci.milwaukie.or.us**.

Sincerely,

Kari Svanstrom, AICP, AIA, LEEDap
Associate Planner

Copy: Land Use File #VR-12-05
Perry A. Nordby, 9925 SE 37th Ave, Milwaukie, OR 97222 (via email)
Steven C. Butler, Planning Director (via e-mail)
Brad Albert, Civil Engineer (via e-mail)

Type III Variance Appeal
9925 SE 37th Ave.
Milwaukie, OR

Request for three (3) variances

General Narrative on current and future building uses and potential benefits to neighborhood:

Current building uses are for existing owner occupied residential 2 bedroom house and double car garage for parking use containing a utility area at rear of garage. The other existing use is a tool shed relocated to the south of the lot.

The expansion request of garage to the front, North, is an attempt to gain more floor space due to short length of garage which makes using washer/dryer difficult with a car parked in the garage at the same time. Expansion to the south is not as desirable due to existing utility plumbing lines existing in the expansion space as well as extending to the south would partially block the only natural day light in the living room space on west side.

The existing patio space west of the living room is an important space for some neighborhood social gatherings and is best used when open to the backyard as much as possible.

The request #3 is for a covered patio area on the west side of the existing garage. The proposed area would be for neighborhood gathering functions with cooking grill on the garage side. This space would be open on three sides. Setback variation requests for this structure are (1) front setback at 20 ft. This request would maximize the open patio exposure to the rear yard without having the new patio covering extending into the existing patio area previously mentioned. The other request (2) for rear yard setback for the new patio covering is a setback of 18 ft. We could on the other hand narrow this patio covering to allow a 20 ft setback but the narrower dimension would limit the use of this space for any future vehicle storage either accessible from the west wall of the existing garage or through the gate area west of the existing driveway.

The other general benefits of these zoning requests mainly on the north side (Harvey St.) allowes the construction to be a true Craftsman Style consistent with what has been done on the east side with the new porch construction done last summer of 2012. The over-all impact of the new construction on this prominent corner in our opinion will be a visual up-grade of this

property hopefully enhancing and encouraging other property owners to upgrade and improve their properties as well.

Request #1 (has two parts)

A) On SE Harvey side of street (north facing elevation), request to extend existing garage footprint 36" toward Harvey Street (see site plan Exhibit #2) accompanying that footprint expansion is a gable roof overhang of 30" (see note on site plan Exhibit #2)

See North side elevation, Exhibit # 4 for view of garage modifications. Garage roof is proposed to be re-framed in steeper pitch than existing the roof pitch which can be seen as a dotted line in the drawing.

Reason for request is due to short length of garage, washer and dryer utilities are too close to any car parked in the garage space therefore making access to washer/dryer utilities barely accessible. The other reason mention in the general comments is to minimize the shading/obscuring solar access to the west windows allowing natural light into the existing living room,

B) Variation of previous request (A) : If previous above request is not acceptable…is to leave garage footprint as it exists (see site plan Exhibit #1) and request that a gable roof overhang be constructed at 48".
(North side elevation sheet Exhibit #4 shows the same concept for front view. Also, see Exhibit #3 and #5 West Elevation at Garage and Typical Knee Brace for proposed roof gable extension of 48")

Approval Criteria

1) Proposed variance will not be detrimental to surrounding properties, natural resources or public health, safety or welfare.

ANSWER: This address is on a corner lot with street frontage at both sides of house.. upgrades are on the east side with new porch roof gable and the proposed north elevation (Harvey St. side) garage roof line changes. There will be no detrimental impacts to surrounding properties but the argument could be made that the proposed changes on the north side of the house are a substantial upgrade from the previous existing condition of the current house (see photo Exhibit # 8) built in the early 40's with north side dining room added in the 1970's.

2) Proposed variance will not interfere with planned future improvements to any public transportation facility or utility identified in officially adopted plan, ie. Transportation System Plan or Water Master Plan.

ANSWER: The north side garage expansion or the requested roof gable extension with the original garage footprint is not anticipated to be in conflict with any of the above criteria unless there might be a problem with the garage footprint expansion of 36" leaving a setback to property line of 15 ft and 19 ft. to street curb line.

3) **Where site improvements already exist...proposed variance will sustain the integrity or enhance existing building or site design.**

ANSWER: As mentioned previously, this house is an early post-war residence with minimum exterior trim details, therefore the proposed changes to the exterior will greatly enhance the Craftsman/Shingle Style "Curb Appeal" potentially upgrading the image of the surrounding residential area considering the prominent corner location.

4) **Impacts from the proposed variance will be mitigated to the extent practicable.**

ANSWER: There are no negative significant impacts to surrounding properties or in any other aspects that would or could require mitigation solution/options....as previously mentioned any impact could be interpreted as "positive".

5) **Discretionary Relief Criteria for Type III Variance : The proposed variance has desirable public benefits.**

ANSWER: Desirable public benefits could include the positive visual impact in the overall effect of the new construction from the river rock covered foundation wall to the river rock covered chimney stacks throughout the house, etc. (See Exhibit # 7, East Elevation)

6) **Proposed variance responds to the existing built or natural environment in a creative way and sensitive manner.**

ANSWER: At the expense of being redundant, I think this case has been demonstrated in a positive manner that the property improvements fit into the natural environment with earth colored accents on the window trim to the natural rock detailing throughout the property that also includes corresponding landscape upgrades that match the stone materials on the house.

7) **Applicant's alternatives analysis provides at a minimum, an analysis of the impacts and benefitjs of the variance proposal as compared to the baseline code requirements.**

ANSWER: As mentioned previously, extension of the garage to the north side would preserve the daylight exposure to the west wall windows of the living room in the existing house and prevent moving existing plumbing utilities in the expansion if we had to expand to the south instead of to the north side.

8) **The proposed variance avoids or minimizes impacts to surrounding properties.**

ANSWER: The garage extension of 36" avoids any impacts on surrounding properties due to the isolated location to surrounding properties having exposure only to the Harvey Street side to the north.

Request #2: Extend roof gable overhangs on existing dining room 20"

Explanation: The existing roof construction of this early post-war house had no gable/roof overhangs to protect the north wall from the weather. Since the house will be re-roofed, we are requesting that the dining room side of the north side elevation have a 20" gable extension/overhang of the roof. See the following Exhibits: Site plans #1 and #2 at labeled "Dining Room" area, Exhibit # 4, North Elevation, Exhibit # 6, Roof Plan.

Approval Criteria

1) Proposed variance will not be detrimental to surrounding properties, natural resources or public health, safety or welfare.

Answer: The roof overhang as can be seen on Exhibit # 4, North Elevation, with the knee brace supports…will continue to enhance the overall house upgrade. No impacts to surrounding properties are anticipated with the roof construction.

2) The proposed variance has desirable public benefits.

Answer: Previously mentioned public benefits are in the category of a major exterior property upgrade that everyone can appreciate since this property is on a prominent corner lot location.

3) Proposed variance responds to the existing built or natural environment in a creative way and sensitive manner.

Answer: Improvements of this portion of the gable roof construction with the requested 20" roof gable overhang continues the theme of responding to the surrounding existing environment. Many of the surrounding houses were built in this same period of history but not all have the authentic Craftsman architectural details requested in this variance, therefore the attempted total composition is hopefully a sensitive approach to preserving and encouraging other houses to be upgraded in similar ways.

4) Applicants alternatives analysis provides at a minimum an analysis of the impacts and benefits of the variance proposal as compared to the baseline code requirements.

ANSWER: The roof gable overhang request of 20"would have no impact on Harvey St. side. Benefits would be better weather protection due to the wider overhang on the siding and windows below as well as increasing the aesthetics of the Craftsman Style using traditional roof overhangs commonly used.

5) Impacts from the proposed variance will be mitigated to the extent practicable.

ANSWER: There are no significant impacts in increasing the gable roof overhang in this north side location for a distance of 20".

Request #3: Provide a patio covering open on three sides west of the existing garage, request setback at side (Harvey St.) at 20 ft. and rear yard setback of 18 ft. (See "Site Plan - Request #3" and Exhibits #9 through #12)

Approval Criteria

1) **The applicant's alternatives analysis provides, at a minimum, an analysis on the impacts and benefits of the variance proposal as compared to the baseline code requirements.**

ANSWER: Impacts on side yard (Harvey St. side) would be minimal due to the fence obscuring view of the addition as well as being below grade at street level further obscuring any view of new structure which might obviate any potential visual impacts.

Reason for the front setback at 20 ft was explained previously in minimizing impacts on the existing open patio on west side of house…if using a 25 ft setback it would move the addition into the visual space of the existing patio into the backyard which has been upgraded with new plantings enhancing the backyard views.

The side yard setback variance would have not significant impact of 18 ft instead of 20ft. This is requested as previously mentioned due to the width of the covered patio structure making it a more efficient dimension for storage purposes of automobiles in the future if needed. Benefits mentioned previously would be a place for community gathering for cook-outs and other positive community spirit activities.

2) **The proposed variance avoids or minimizes impacts to surrounding properties.**

ANSWER: This covered patio avoids any surrounding impacts due to screening from Harvey St. and large yard space to the rear of property.

3) **Proposed variance has desirable public benefits.**

ANSWER: Has been answered previously as a positive place for neighborhood activities in all weather variations with cooking grill and open on three sides for good access.

4) **Impacts from the proposed variance will be mitigated to the extent possible**

ANSWER: The existing fence to the north may work to obscure any potential negative impacts (see elevation Exhibits # 9 – 12). Exhibit #9 shows Harvey St. elevation

Any impacts however, in our opinion, would be positive as it attempts to carry out the Craftsman Style of architecture throughout this project.

Exhibits/Site Plans:

A) See "Location Plan" for surrounding properties

B) See Exhibits 9 through 12 for Covered Patio drawings

C) See "Site Plan-Request #3" for site coverage data

ATTACHMENT 2b

Alligood, Li

From: Alligood, Li
Sent: Thursday, May 23, 2013 1:31 PM
To: 'rbwgroup1@yahoo.com'
Cc: pnordby@jaeoregon.com
Subject: VR-12-05 (Variance Review for 9925 SE 37th Ave)
Attachments: Incompleteness letter.pdf

Hello Ron,

I am conducting the analysis of your variance review request for Perry Nordby's property at 9925 SE 37th Ave. I understand that you needed to request that the City deem the application complete in order to prevent the application from expiring. However, there are still some key pieces of information that are missing and that are needed for me to draft a recommendation (or at least a recommendation for approval) to the Planning Commission.

Please see the attached incompleteness letter for additional details about those items, which are briefly outlined below:

- An analysis of the variance request as compared to the base zone standards. Specifically, you are requesting a variance to the base zone rear yard setback standards, as well as the street side yard setback standards. Generally, encroachment into an existing patio is not likely to be a compelling argument for expanding the garage to the north instead of the south. Are there other options to accommodate the laundry facilities, such as renovation of an interior area of the house, or an addition to the house rather than the garage?

- Discussion of supplemental development requirements applicable to the project: Specifically, the applicable supplemental development requirements of MMC 19.504.1 and 19.504.7, which address the additional setback requirements along major streets, such as Harvey.

- Off-street parking and loading standards and requirements: there are two components to this discussion:
    - The existing off-street parking spaces are in the garage and are nonconforming in regards to their location within the required street side yard setback. The proposed variance would move these spaces even closer to the Harvey St lot line and would increase the nonconformity.
    - Extending the garage closer to the Harvey St lot line would create a situation where the driveway would be very steep, and would potentially make the garage inaccessible. This situation could be exacerbated when Harvey St widens in the future. You should address this issue as part of your base zone standard discussion above, as well as a potential impact of the proposal.

- Generally, a discussion of potential impacts related to garage access, future widening of Harvey St, etc.

Please submit any revised materials and information by **Monday, June 10** so I can incorporate them into my analysis recommendation.

Thanks,

Li Alligood
Associate Planner
City of Milwaukie Planning Department
6101 SE Johnson Creek Blvd
Milwaukie, OR 97206
P 503-786-7627

Variance, VR-12-05 at 9925 SE 37th Ave, Milwaukie, OR 97206

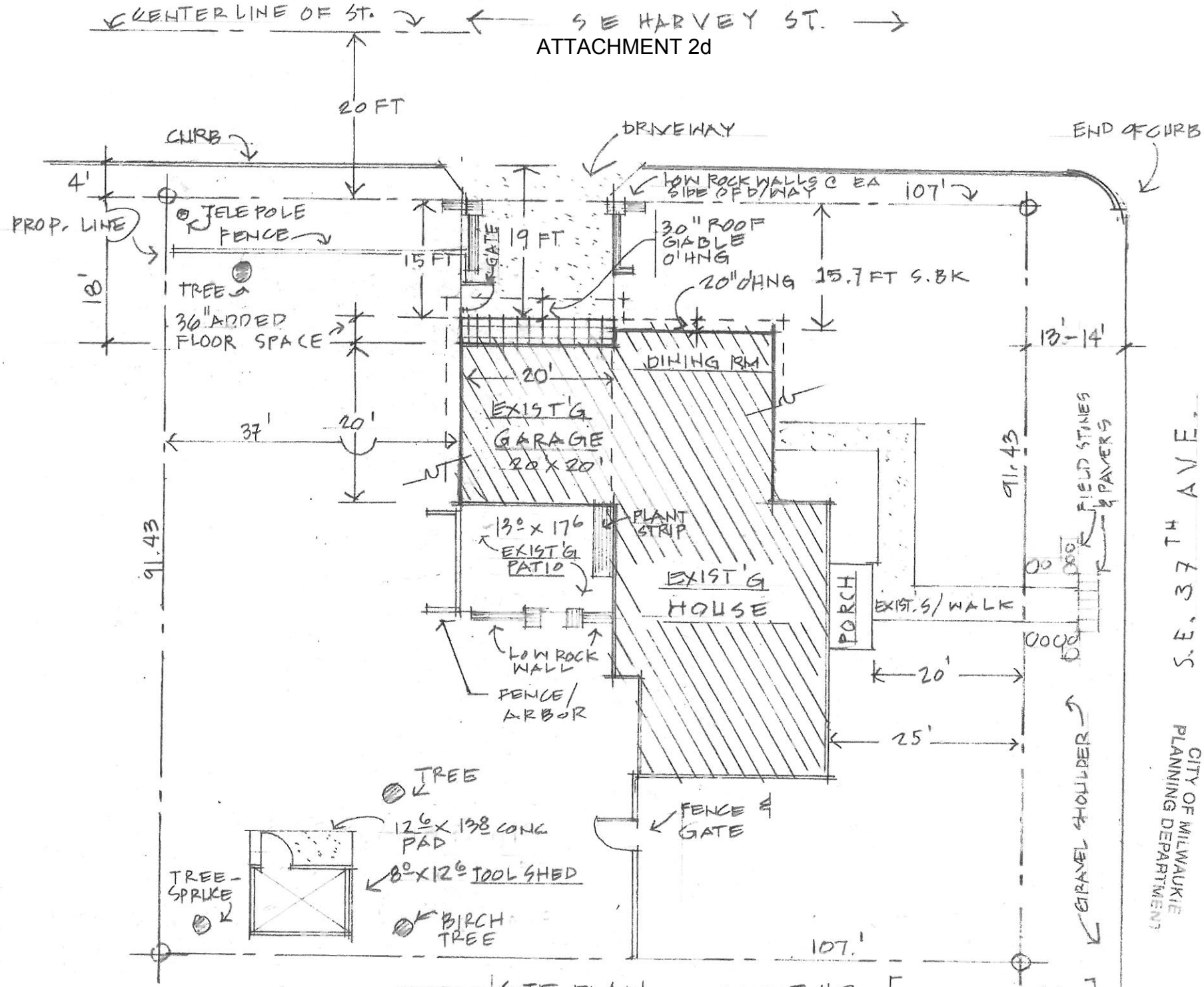
To: Li Alligood
From: Ron Woodruff June 1, 2013

Re: Response to May 23 clarification of Type III Appeal info.

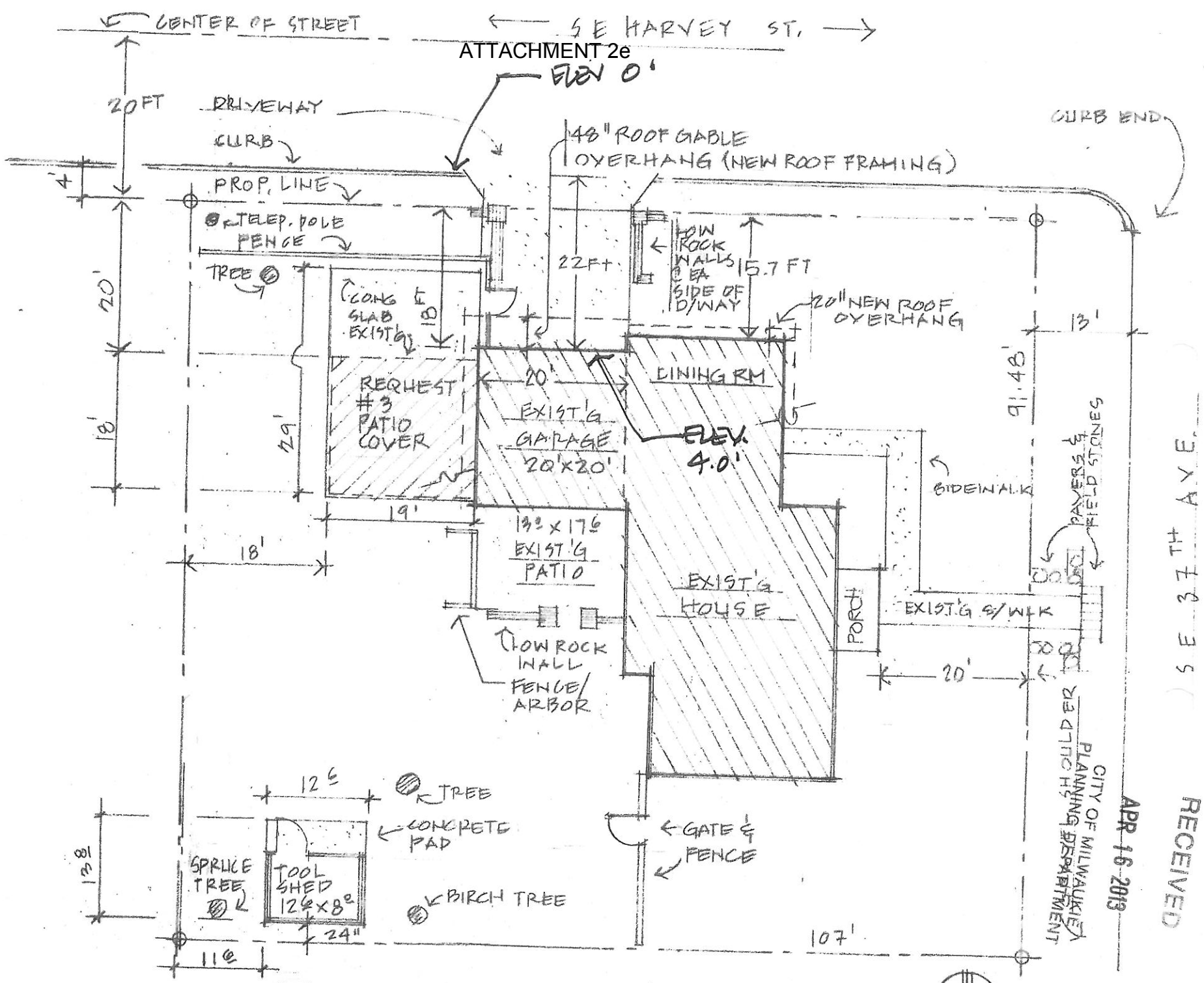
1. Garage issue, why it is not desired to expand into the patio area to the south. Expansion to the south is the best possible alternatives from the owner's view.
   - Expansion to the south would require moving the plumbing wall and all the associated plumbing supply and return lines and relocating the 220 volt electrical supply.
   - Expanding to the south as previously mentioned would also partially block the South facing natural light into the living room.
   - There is no convenient way to add laundry facilities to the house as it is currently configured. This is a two bedroom post-war minimal house with a hallway that dead ends into the second bedroom therefore there is no way to add to the existing exterior for the laundry room short of a major remodel of the south end of the house that contains the two only bedrooms.
   - The other reason for extending the garage to the Harvey side is to resolve the roof framing problems with the existing construction that has resulted in a dry rotted garage wall from a roof valley above that never drained properly from original design.

2. Harvey St. side setback issues and side yard off-street parking
   - Extending the garage to Harvey street adds to the existing non conformity based on where the house was originally sited. The steep grade as a result of the garage being closer to Harvey St. is OK with the owner and as viewed by two City engineers and Planning Director Stephen C. Butler, Matthew Palmer, assoc. engineer and civil engineer, Jason Rice on Oct. 2, 2012.
     We have worked out the resulting garage slope and it not too steep for the owner and the intended use of the garage, this was discussed with the City engineering staff…the home owner will comply with the ADA approach on the concrete apron between the driveway and the street.

ATTACHMENT 2d

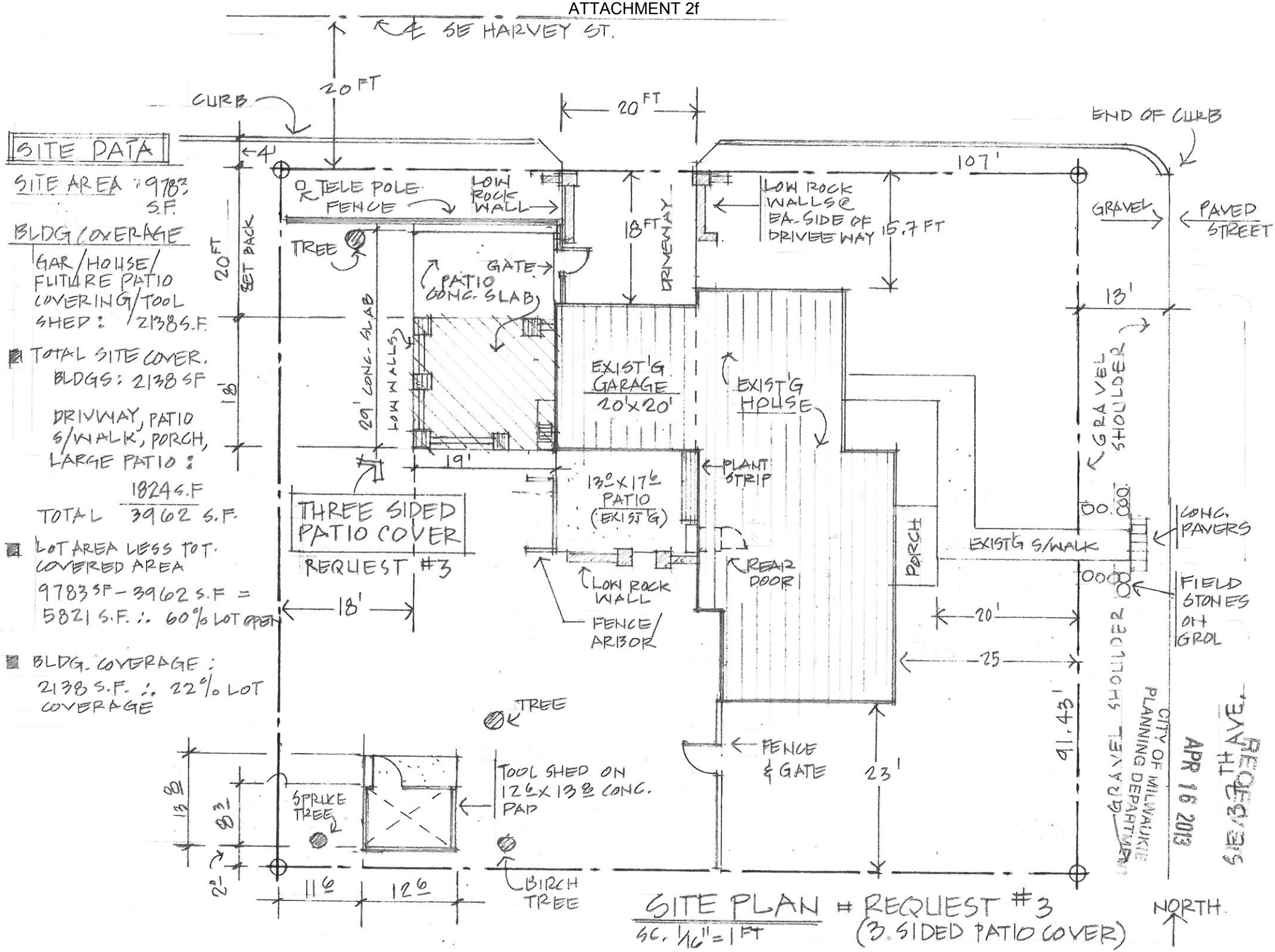


SITE PLAN = EXHIBIT #2 [REQUEST #1(A)]
SC. 1/16" = 1'FT



SITE PLAN = EXHIBIT #1 [REQUEST #1 (B)]
SCALE 1/16" = 1 FT. 9925 SE 37TH AVE

ATTACHMENT 2f



RECEIVED

OCT 18 2012

CITY OF MILWAUKIE
PLANNING DEPARTMENT

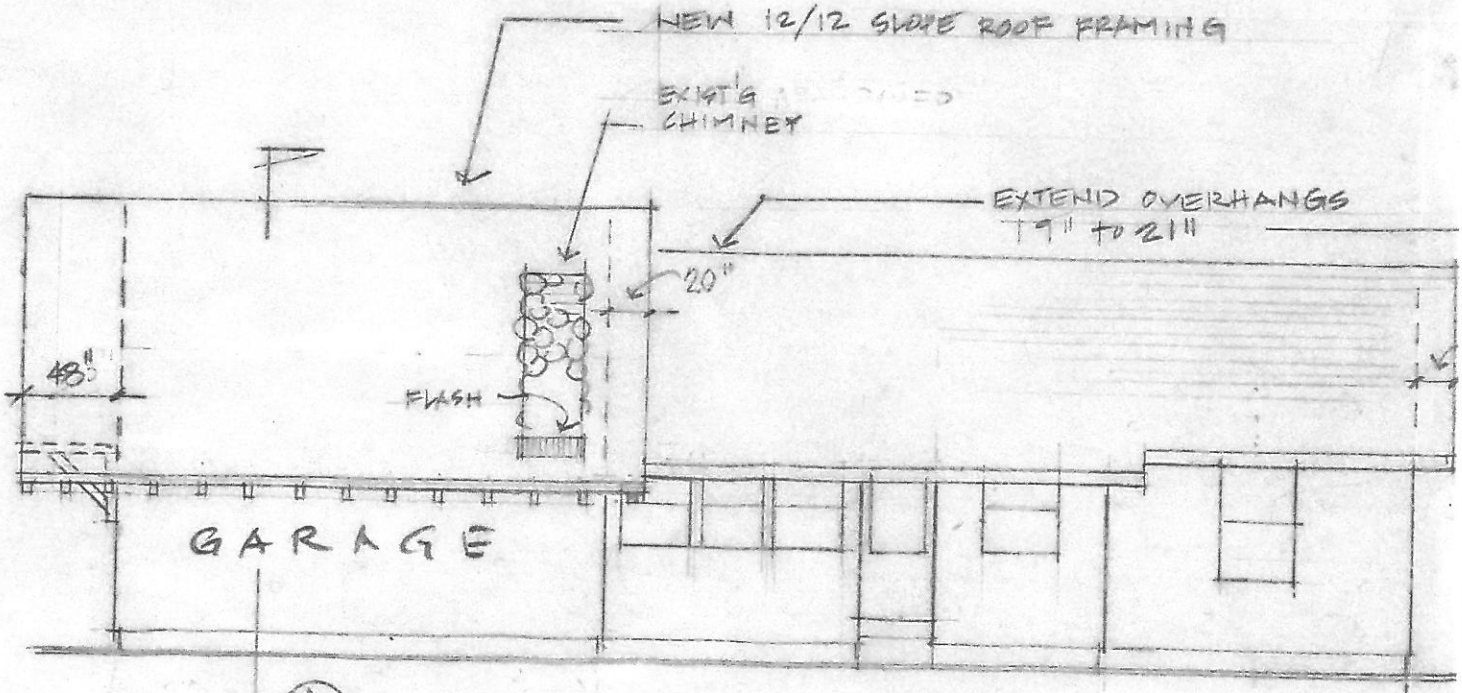
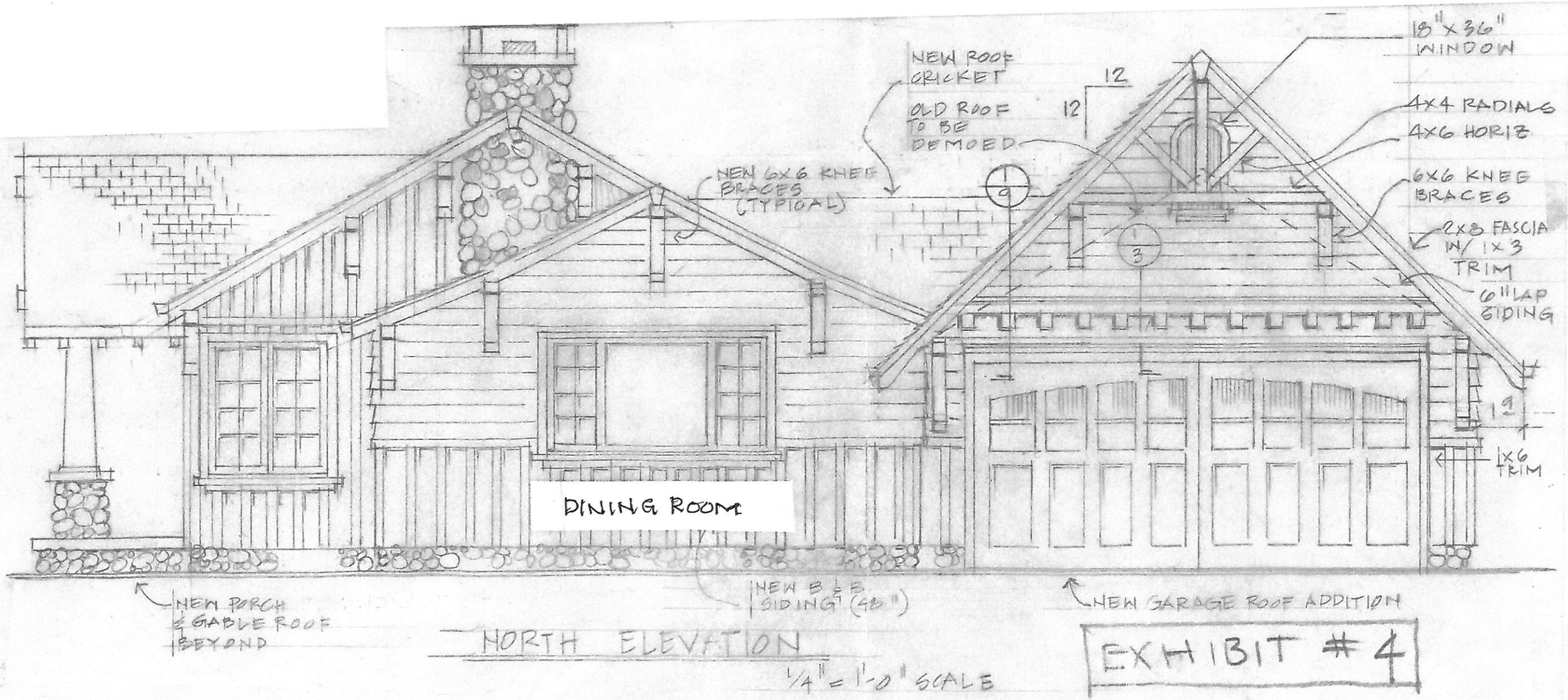


EXHIBIT # 3

WEST ELEV.

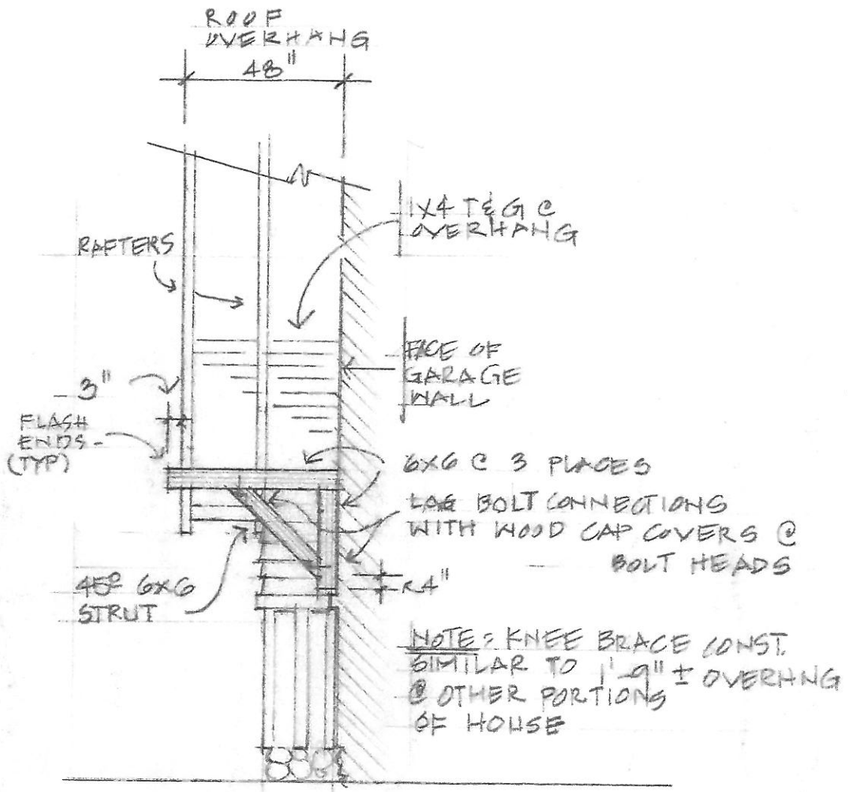


NORTH ELEVATION
1/4" = 1'-0" SCALE

EXHIBIT #4

SHEET NO.
3
OF
9

REV. 5/21/12

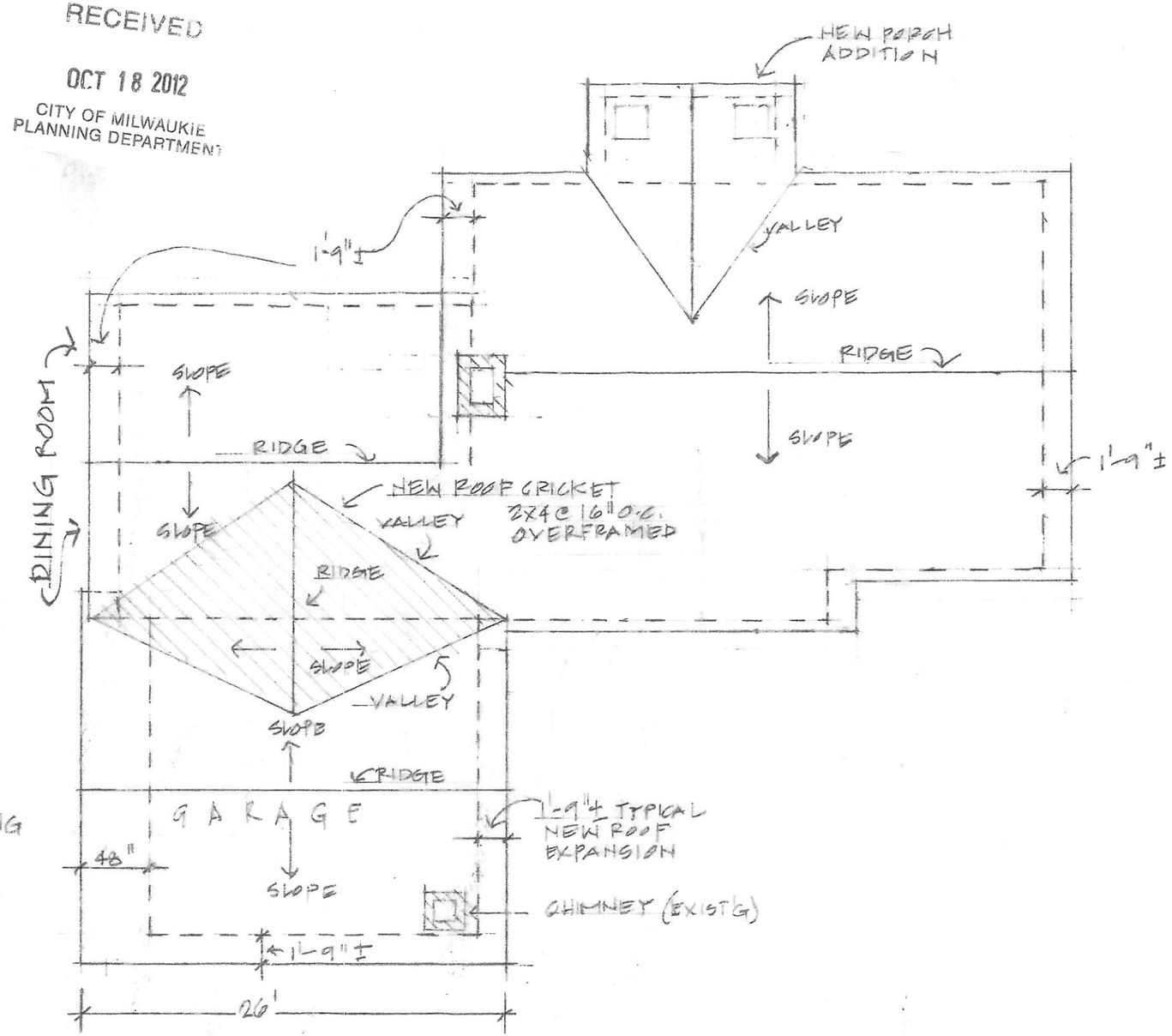


TYPICAL KNEE BRACE @ GARAGE ROOF OVERHANG

1/9

SCALE: 1/4" = 1'-0"

EXHIBIT #5



ROOF PLAN

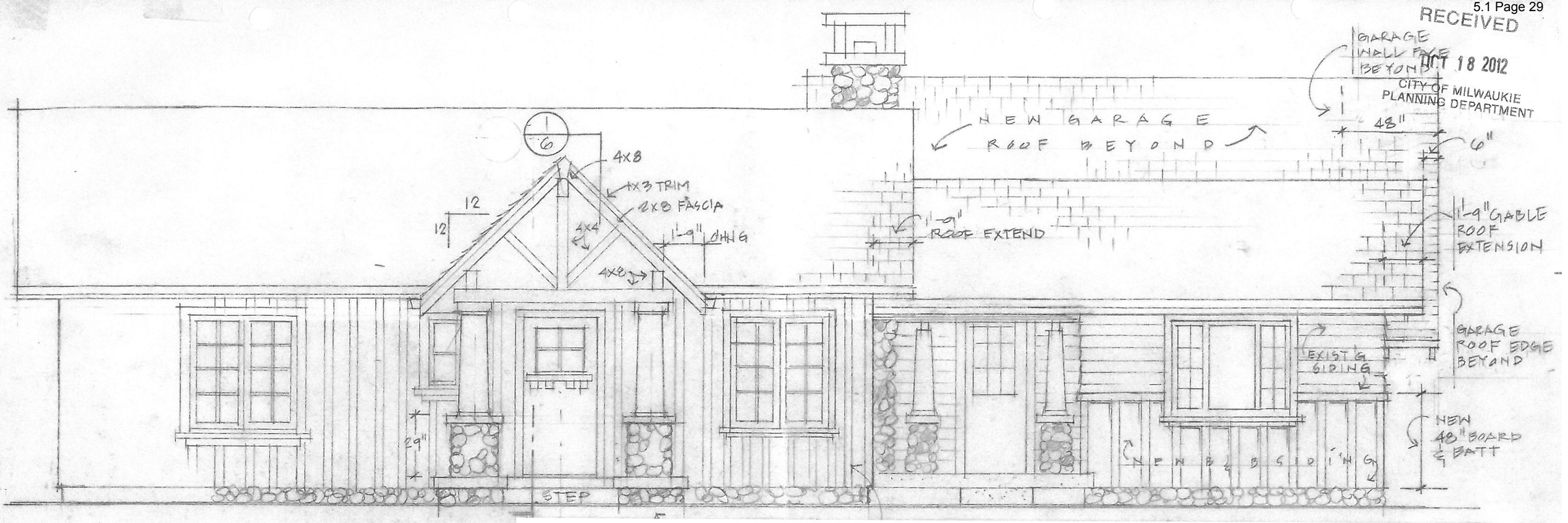
SCALE 1/8" = 1'-0"

EXHIBIT #6

REV. 5/21/12

SHEET NO.
9 OF 9

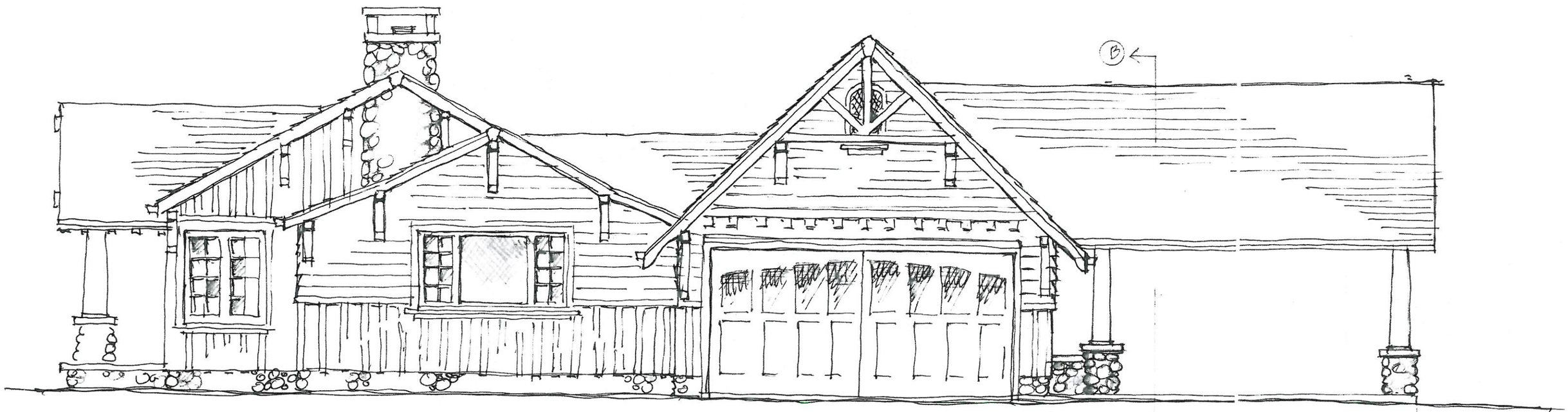
RECEIVED
OCT 18 2012
CITY OF MILWAUKIE
PLANNING DEPARTMENT



EAST ELEVATION
1/4" = 1'-0" SCALE

EXHIBIT #7

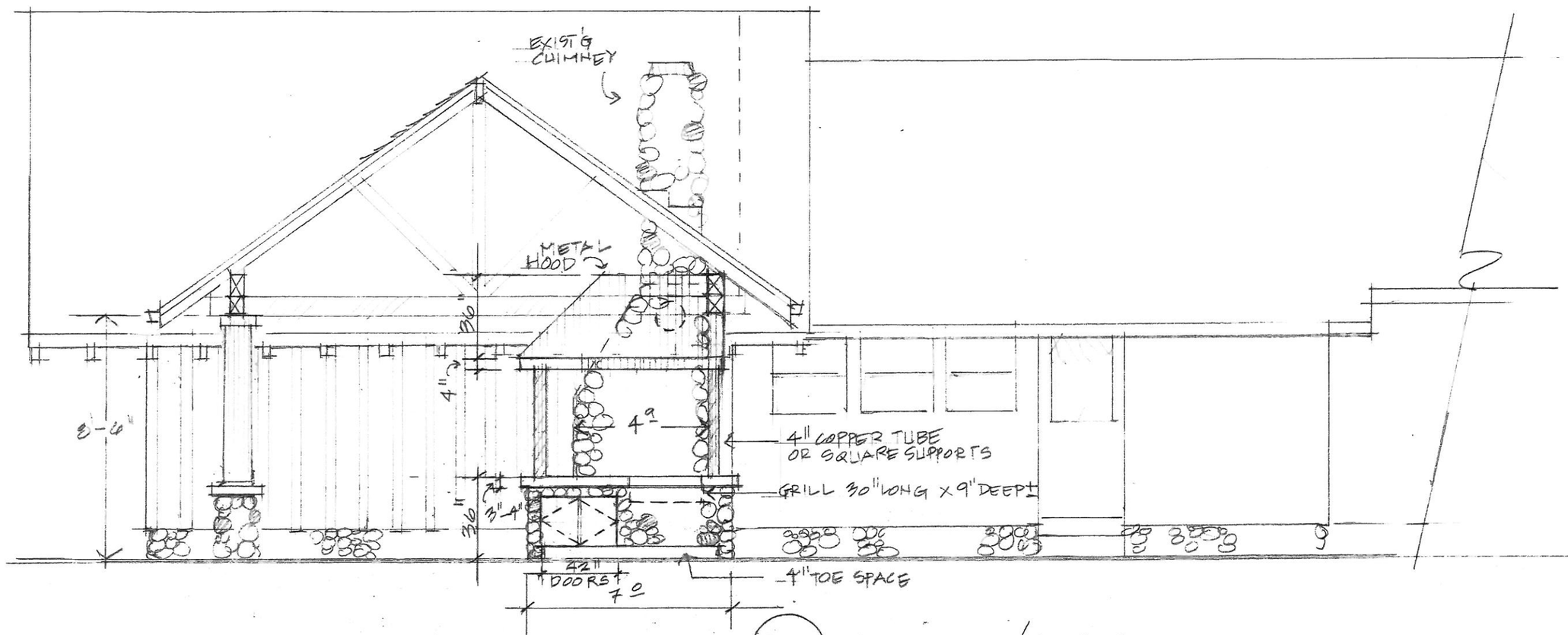
EXHIBIT #8



NORTH ELEVATION

1/4" SCALE 3/26/13

EXHIBIT #9

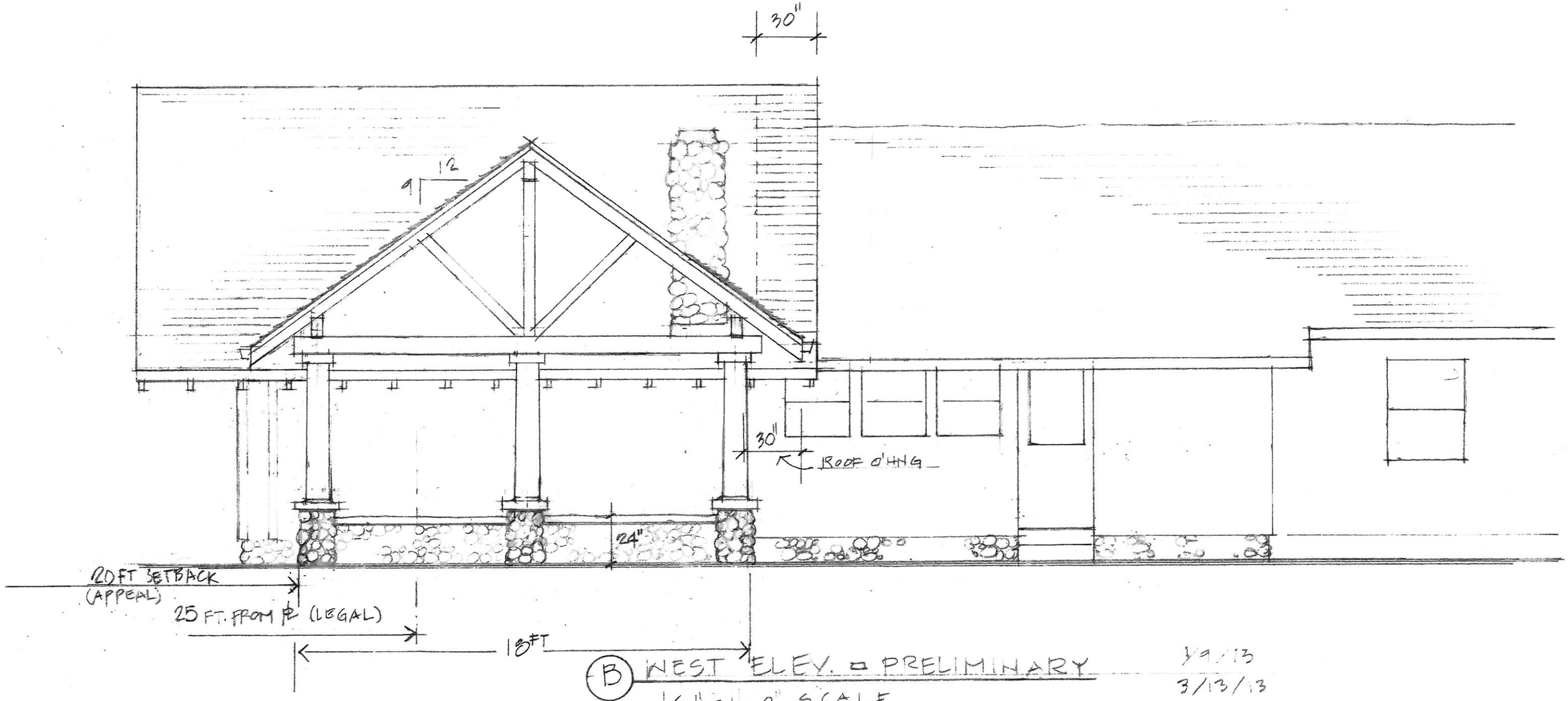


B-B GAR WALL/COOK TOP ELEVATION/SECTION

1/4" SCALE 3/26/13

(PATIO COVERING)

EXHIBIT #10



B WEST ELEV. ▫ PRELIMINARY

3/13/13

1/4" = 1-0" SCALE

(PATIO COVERING)

EXHIBIT # 11

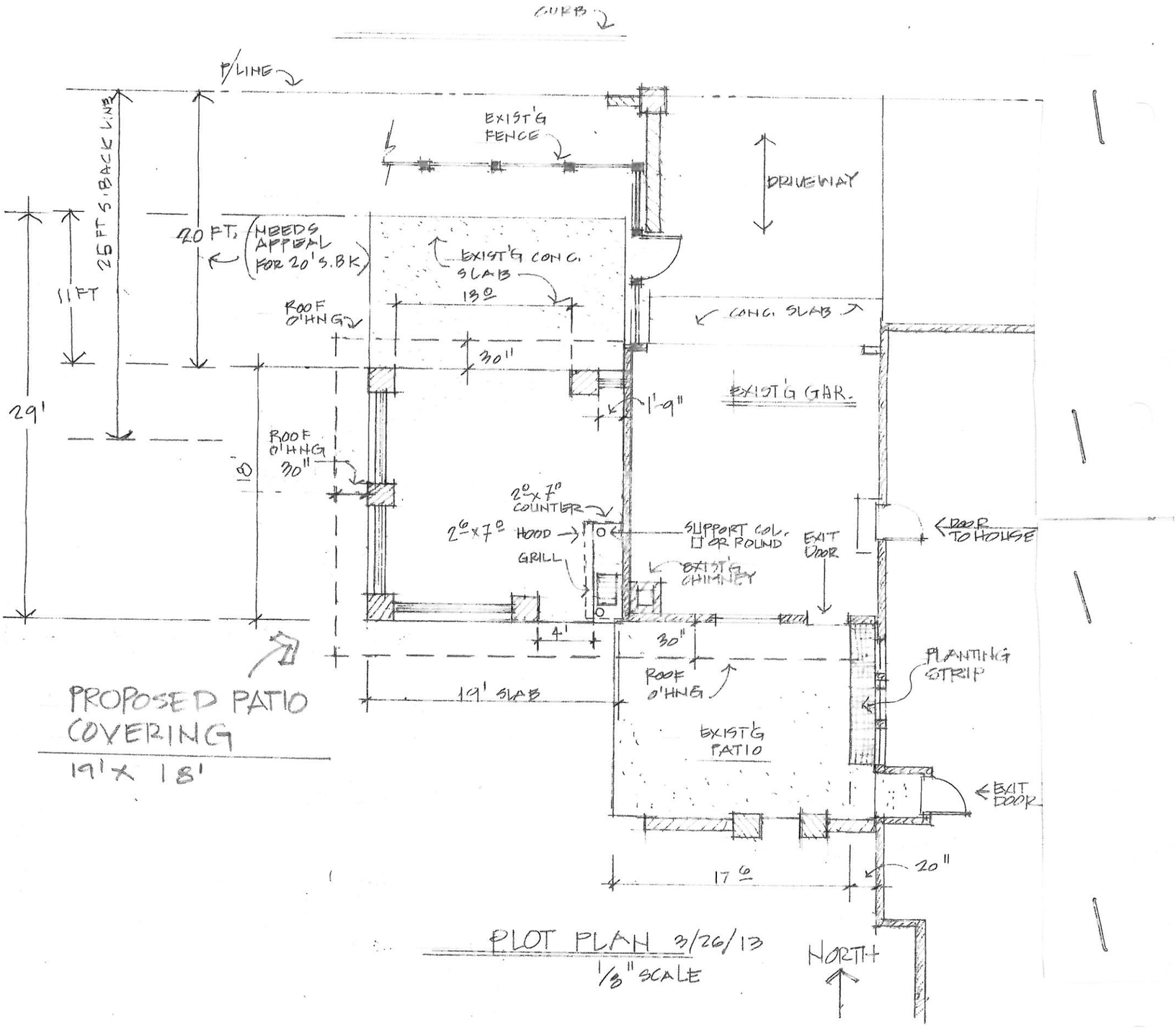
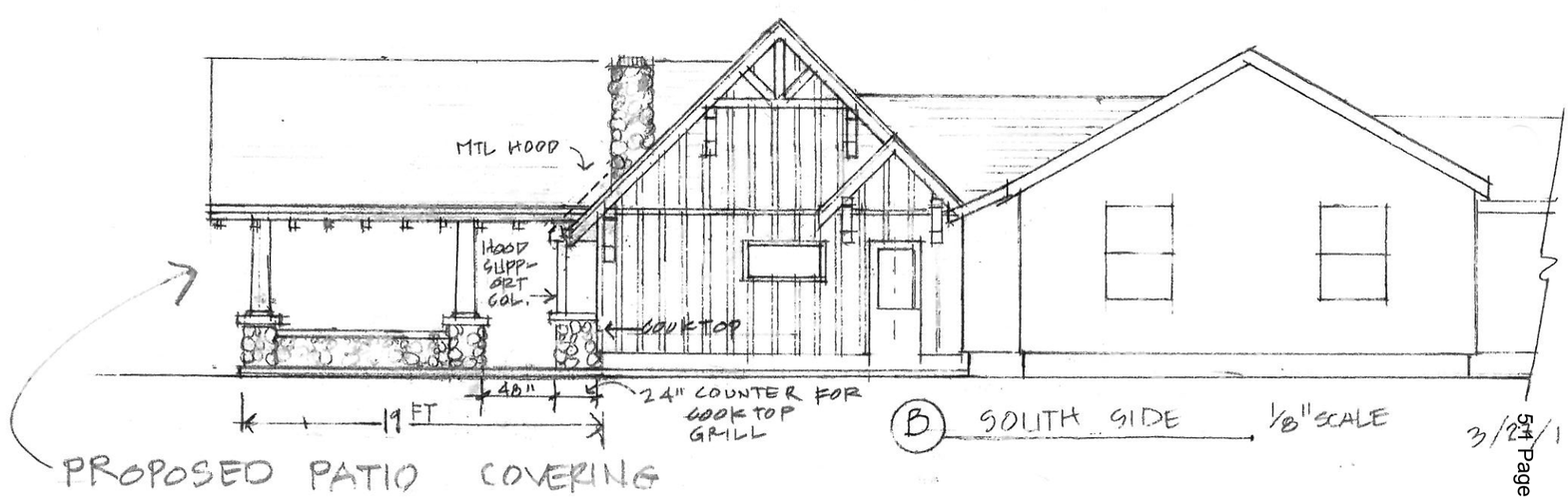

CURB
P/LINE
25 FT S. BACK LINE
EXIST'G FENCE
DRIVEWAY
20 FT. (NEEDS APPEAL FOR 20' S.BK)
11 FT
29'
EXIST'G CONC. SLAB
13'0"
ROOF O'HNG
30"
CONC. SLAB
EXIST'G GAR.
1'-9"
ROOF O'HNG 30"
2'0" x 7'0" COUNTER
2'6" x 7'0" HOOD
GRILL
SUPPORT COL. □ OR ROUND
EXIT DOOR
DOOR TO HOUSE
EXIST'G CHIMNEY
4'
30"
ROOF O'HNG
19' SLAB
PLANTING STRIP
EXIST'G PATIO
EXIT DOOR
17'0"
20"
PROPOSED PATIO COVERING
19' X 18'
PLOT PLAN 3/26/13
1/8" SCALE
NORTH

EXHIBIT # 12


MTL HOOD
HOOD SUPPORT COL.
COOKTOP
48"
24" COUNTER FOR COOKTOP GRILL
19 FT
PROPOSED PATIO COVERING
B SOUTH SIDE
1/8" SCALE
3/26/13

ATTACHMENT 3

Alligood, Li

From: Svanstrom, Kari
Sent: Thursday, May 02, 2013 9:47 AM
To: Alligood, Li
Subject: FW: VR-12-05

From: Larsen, Tom
Sent: Thursday, April 25, 2013 3:16 PM
To: Svanstrom, Kari
Subject: VR-12-05

Kari,
I have no comment on this application.
Thanks,
-Tom

Clackamas County Fire District #1
Fire Prevention Office

E-mail Memorandum

To: City of Milwaukie Planning Department

From: **Shawn Olson, Clackamas Fire District #1**

Date: **05/01/2013**

Re: **9925 SE 37th Ave.**

Clackamas Fire District #1 has no comments regarding access and water supply for this proposed project.

Thank you.

2930 S.E. Oak Grove Blvd. • Milwaukie, OR 97267 • 503-742-2660

MEMORANDUM

TO: Community Development Department

THROUGH: Gary Parkin, Director of Engineering

Jason Rice, Engineering Manager

FROM: Brad Albert, Civil Engineer

RE: Variance – 9925 SE 37th Avenue
VR-12-05

DATE: June 3, 2013

Proposed garage expansion which would increase encroachment into the street side yard setback.

1. MMC Chapter 19.700 – Transportation Planning, Design Standards, and Procedures

   The Engineering Department finds that MMC Chapter 19.700 does apply to this application.

Recommended Conditions of Approval

None

Other notes

The applicant has proposed three different variance scenarios with this application. The first is to expand the garage footprint toward Harvey Street, the second being to extend the eve of the garage toward Harvey Street, and the third being constructing a patio on the west side of the garage and reducing the rear yard setback. The Engineering Department evaluated the existing driveway approach that serves the site. The driveway is currently not constructed to the Public Works Standards and will need to be brought into conformance. The applicant has an approved right-of-way permit for reconstructing the driveway. The reconstruction of the driveway approach will make the current driveway steeper. Thus, if the applicant was to construct the garage closer to Harvey Street, the driveway would have to be constructed even steeper and may pose difficult to use. The Engineering Department would not be able to support the variance request under the first scenario because of the steep grade issues and usability of the driveway approach. Under scenarios two and three, the Engineering Department would be able to support both scenarios as they would not require the driveway to be constructed any steeper.

Recommended Findings of Denial
File #VR-12-05, Nordby Addition

Sections of the Milwaukie Municipal Code not addressed in these findings are found to be inapplicable to the decision on this application.

1. The applicant, Ron Woodruff, on behalf of Perry Nordby, has applied for relief from the street side yard and rear yard setbacks and approval to construct an addition to the existing garage, construct a new covered patio area, and extend the eaves along the northern façade of the single-family home at 9925 SE 37th Ave. This site is in the R-7 Zone. The land use application file number is VR-12-05.

2. Relief from the setbacks is required because the existing single-family dwelling is nonconforming in regard to the street side yard setback, and the applicant seeks to extend the nonconformity. In addition, the applicant seeks to construct an addition to the home that extends into the required rear yard setback. The proposal requires variances to the required street side yard setback and rear yard setbacks of the R-7 zone.

   Per MMC Subsection 19.911.3.A.3, one variance application may include up to three variance requests. The variance application includes four separate requests:

   - Request #1:

     (A) 50% Variance to the street side yard setback to permit a 3 ft extension of the garage footprint and 2 ft 6 in extension of the gable roof overhang (eaves) on the northern façade of the house.

     (B) Alternative to Request #1(A): 43% variance to extend the gable roof overhang by 4 ft and leave the garage footprint as-is.

   - Request #2: 47% variance to street side yard setback to extend the roof gable overhang (eaves) on the north side of the house by 20 in.
   - Request #3: 20% variance to the street side yard setback to permit construction of a 342 sq ft covered patio area.
   - Request #4: 10% variance to the rear yard setback to permit construction of a 342 sq ft covered patio area.

   The Planning Commission finds that an additional variance application beyond File #VR-12-05 is required to support this number of variance requests.

3. The application was submitted on October 18, 2012. It was initially deemed incomplete by City staff on October 30, 2012. The applicant revised and resubmitted the application on April 16, 2013, requested that the City deem the application complete. The applicant submitted additional information on June 3, 2013. The City has until August 14, 2013, to issue a final decision on the application.

4. The proposal is subject to the following provisions of the Milwaukie Municipal Code (MMC):[1]

   - MMC Section 19.302 Residential Zone R-7

[1] The application was submitted on October 18, 2012, prior to the effective date of Ordinance #2051, which repealed the residential zones R-5, R-7, and R-10 (MMC 19.301-303) and replaced them with MMC 19.301 Low Density Residential Zones; and expanded the design standards for new single-family dwellings and established applicability for additions to street-facing facades. Per MMC 19.1001.7.B, the application is subject to the standards and criteria in place at the time of original submittal.

- MMC Subsection 19.501.2 Yard Exceptions
- MMC Chapter 19.800 Nonconforming Uses and Development
- MMC Section 19.911 Variance Review
- MMC Section 19.1006 Type III Review

5. The application has been processed and public notice provided in accordance with MMC Section 19.1006 Type III Review. A public hearing was held on June 25, 2013, as required by law.

6. The development standards of the R-7 residential zone in MMC Section 19.301 are applicable to this site. The Planning Commission finds that the proposed development meets the standards of this section except for the variances to the required street side yard depth and rear yard depth.

7. MMC Chapter 19.800 Nonconforming Uses and Development

   a. MMC 19.804.2 establishes provisions for approving the alteration or expansion of nonconforming development.

      The existing structure is nonconforming in regards to the street side yard setback and the location of the off-street parking spaces on site. The applicant proposes to extend the north gable end eaves and the existing garage footprint to the north. Per MMC 19.804.2.A, alterations or expansions that increase or extend the nonconformity are not allowed unless a variance is approved pursuant to MMC 19.911.

   The Planning Commission finds that MMC 19.911 is applicable to this application.

8. MMC Chapter 19.911 Variances

   a. MMC 19.911.3 establishes the review process for variance applications.

      The applicant has requested variances between of 20-50% to the street side yard width, and a variance of 10% to the rear yard width.

      Per MMC 19.911.3.B, a variance of up to up to 25% to a front, rear, or street side yard width standard may be processed through Type II review. One of the requests for the minimum street side yard width standards exceed 25%, and must be processed through Type III review. Per MMC 19.011.3.A, if one or more of the variance requests is Type III, the application will be processed through a Type III review.

      The Planning Commission finds that the application is subject to Type III review.

   b. MMC 19.911.4.B establishes criteria for approving Type III Variance applications.

      An application for a Type III Variance shall be approved when all of the criteria in either 19.911.4.B.1 or 2 have been met. An applicant may choose which set of criteria to meet based upon the nature of the variance request, the nature of the development proposal, and the existing site conditions.

      The applicant has chosen to address the criteria of 19.911.4.B.1 Discretionary Relief Criteria.

      (1) *The applicant's alternatives analysis provides, at a minimum, an analysis of the impacts and benefits of the variance proposal as compared to the baseline code requirements.*

The applicant's alternatives analysis provided minimal comparison of the impacts and benefits of the proposal as compared to the baseline code requirements. For multiple aspects of the proposal the applicant has provided no justification for the request.

The Planning Commission finds that the applicant has not adequately analyzed the benefits and impacts of the proposed variance requests in comparison to the baseline code requirements. This criterion is not satisfied.

(2) *The proposed variance is determined by the Planning Commission to be both reasonable and appropriate, and it meets one or more of the following criteria:*

(a) *The proposed variance avoids or minimizes impacts to surrounding properties.*

The applicant has not provided responses to this criterion for multiple aspects of the proposed development. The Planning Commission finds that the applicant has not demonstrated that this criterion is met.

(b) *The proposed variance has desirable public benefits.*

The applicant has indicated that the requested variances provide public benefits in the form of aesthetic improvements.

"Public benefits" are typically understood to refer to benefits to be enjoyed by members of the general public as a result of a particular project, or preservation of a public resource. Aesthetic improvements of a specific and limited nature do not typically constitute a public benefit.

The Planning Commission finds that this criterion is not applicable.

(c) *The proposed variance responds to the existing built or natural environment in a creative and sensitive manner.*

This criterion encourages flexibility in site planning and development when the existing built or natural environment provide challenges to standard development or site planning. The site is flat and rectilinear and is developed with a conventional single-family dwelling.

The Planning Commission finds that this criterion is not applicable.

The Planning Commission finds that the applicant has not demonstrated that the project meets any of the three criteria within this subsection, and therefore this subsection is not satisfied.

(3) *Impacts from the proposed variance will be mitigated to the extent practicable.*

The applicant has not provided an analysis of the impacts of the projects in relation to the baseline code requirements. Because these impacts are not adequately identified, the applicant has not demonstrated what practicable mitigation would be appropriate. The Planning Commission finds that this criterion is not satisfied.

The Planning Commission finds that the applicant has not adequately addressed the approval criteria for a discretionary variance request in Subsection 19.911.4.B.1. The Planning Commission denies the variance request.

9. The application was referred to the following departments and agencies on April 23, 2013:
   - Milwaukie Building Division

- Milwaukie Engineering Department
- Clackamas County Fire District #1
- Ardenwald-Johnson Creek Neighborhood District Association Chairperson and Land Use Committee

The comments received are summarized as follows:

- **Tom Larsen, Building Official:** No comments.
- **Shawn Olson, Clackamas Fire District #1:** No comments regarding access and water supply.
- **Brad Albert, Civil Engineer:** Concerns about impacts of expansion of the garage to the north re: increased slope of driveway and approach, which could render the existing garage difficult or impossible to access.

MILWAUKIE
Dogwood City of the West

To: **Planning Commission**

Through: **Steve Butler, Interim Community Development Director/Planning Director**

From: **Li Alligood, Associate Planner**
Brad Albert, P.E., Civil Engineer

Date: **June 18, 2012, for June 25, 2013, Public Hearing**

Subject: **File:** CPA-13-02
Applicant: Steve Butler for the City of Milwaukie

ACTION REQUESTED

Recommend that City Council approve application CPA-13-02 with the ordinance, findings, and amendments found in Attachment 1. This would adopt the 2012 Stormwater Master Plan as an ancillary document to the Comprehensive Plan and amend existing text related to stormwater treatment within the Comprehensive Plan.

BACKGROUND INFORMATION

A. History of Prior Actions and Discussions

- **April 9, 2013:** Staff briefed the Commission on the Stormwater Master Plan (SWMP) in preparation for an adoption hearing.
- **March 20, 2012:** Council passed Resolution #12-2012 authorizing a $179,997 contract with Brown and Caldwell to produce a 2012 Stormwater Master Plan.
- **November 2011:** Staff briefed Council on the pending National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit, a document that heavily influenced the creation of the new Stormwater Master Plan.
- **June 7, 2011:** Council adopted the 2012-2016 Capital Improvement Plan and the 2011/2012 Budget, including the 2012 Stormwater System Master Plan

B. Stormwater Master Plan Background

The Stormwater Master Plan (SWMP) is used to manage the City's stormwater drainage system, provide information about potential flooding, infrastructure issues, environmental

and regulatory needs, and a plan to successfully operate the system for the next 20 years. The policies of the SWMP directly impact the quality and quantity of surface water runoff, the frequency of flooding and ponding in City streets, and the quality of surface water runoff when it reaches the receiving water bodies (including rivers, streams, and wetlands).

The 2004 SWMP, adopted by Council in 2005,[1] guided the City to several capital improvement projects and outlined the Spring Creek basin. In 2012, the City began efforts to update the 2004 Plan. The need for the update was driven by:

- Changing regulations for UICs and the City's NPDES MS4 permit requirements:
  - The City received a Water Pollution Control Facility (WPCF) permit from the DEQ for the City's Underground Injection Control (UIC) system in July 2012. This permit also considers water quality and protection of ground water. The 2004 SWMP does not recognize this.
  - The City received a new National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit from the Department of Environmental Quality (DEQ) in March 2012. The new permit accounts for water quality as well as collection and conveyance of stormwater. The 2004 SWMP does not have a water quality component.
- Funding challenges preventing the City from implementing capital improvement projects (CIPs) as identified in the 2004 SWMP. The cost associated with permit compliance has been higher than anticipated and has made it difficult to construct capital improvement projects.

In addition to changing regulations, a number of changes have occurred within the City since adoption of the 2004 SWMP. These changes have altered the assumptions and data used in the development of the 2012 SWMP. Some of these changes include:

- Completion of an inventory and GIS mapping of the stormwater system: this inventory and GIS mapping provides a level of detail that was not available during the preparation of the 2003 SWMP. It has enabled much more accurate hydraulic model of the City's stormwater system to be constructed to inform the 2012 SWMP.
- Adoption of stormwater system design standards following new guidelines: the City's Public Works Standards was adopted on May 15, 2007.[2] The Public Works Standards provide the size of stormwater lines based on the impervious area served. This standardized method of determining stormwater line sizes was not taken into account as part of the 2004 SWMP.

The City's overarching goal for the 2012 SWMP update is to conduct a comprehensive evaluation of its stormwater program and stormwater system, focusing on opportunities to improve water quality and system performance, and prioritize CIPs that can be installed on a realistic implementation schedule. See Attachment 1 Exhibit B – 2012 Stormwater Master Plan for the full document.

C. Contents of the Stormwater Master Plan

One major element of the updated SWMP is a new hydraulic model of the stormwater system that integrates the City's GIS mapping system. Other key elements include:

[1] Resolution 14-2005
[2] Resolution 32-2007

stormwater flooding modeling; Underground Injection Control (UIC) analysis; stormwater retrofit analysis; DEQ permit compliance; stormwater system capital improvement plan; stormwater system development charge update; and a stormwater rate study.

The contents of the SWMP are summarized below:

- Study area characteristics – identification of existing infrastructure and regulatory requirements related to stormwater management.
- Evaluation - results of the stormwater system capacity evaluation, including identification of flood control CIP locations; water quality retrofit assessment and identification of water quality CIP locations.
- Identification and prioritization of CIP projects – projects that are needed to address system capacity deficiencies, water quality objectives, and UIC decommissioning needs.
- City staffing levels related to CIP implementation – examination of Engineering and Public Works staffing needs to implement the projects identified in the SWMP.
- Recommended stormwater utility rates and system development charges (SDCs) - analysis of costs for operating and maintaining the stormwater system, and the associated fees that should be charged for existing and new users or increased use of existing service.

The land use application would adopt the SWMP as a Comprehensive Plan ancillary document. The main reason for adopting the SWMP into the Comprehensive Plan is so that the Comprehensive Plan contains information pertinent to the future growth and development of the City. Goals and policies for land use need to consider the provision of adequate urban services. Adopting the SWMP into the Comprehensive Plan helps to coordinate the City's aspirations for growth and development with its ability to provide services.

D. Amendments to Comprehensive Plan Text

In addition the SWMP document itself, staff is proposing limited amendments to the text of the Comprehensive Plan (see Attachment 1 Exhibit C). Most of the edits are factual updates reflecting the revisions to regulations and City policy since the adoption of the 2004 SWMP.

The following is explains the amendments in Attachment 1 Exhibit C:

Chapter 3 - Environmental and Natural Resources

Open Spaces, Scenic Areas, and Natural Resources Element

- Objective 2, Policy 6: The proposed edits allow consistency with current standards that regulate both new and redevelopment.

Air, Water and Land Resources Quality Element

- The proposed edits reflect the fact that there has been no source identification study targeted at this area; the phrasing is adjusted to reflect this potential source.

Chapter 5 - Transportation, Public Facilities and Energy Conservation

Public Facilities and Services Element

- Second paragraph following "Drainage and Streets": Updated text revises system data for consistency with 2012 Stormwater Master Plan.
- Third paragraph following "Drainage and Streets": Updated text acknowledges that subsequent storm drainage master plans were completed only for the City, not surrounding areas or regional areas.
- First new paragraph: Proposed new text identifies the new SWMP document, its scope, the City's upcoming capital project based on the plan, and discussion of funding needs.
- Last paragraph: Revisions reflect the adopted stormwater utility fee and update to be adopted by Council.

Objective #6 – Drainage and Streets

- Policy 1: Proposed additional text to specify that flooding problems are the focus of this policy.
- Policy 3: Proposed edits allow consistency with current standards that regulate both new and redevelopment.
- Policy 6 (new): Proposed additional text to reflect the policies of the 2012 SWMP and to allow consistency with the adopted 2007 Public Works Standards.

CONCLUSIONS

Staff recommends that the Planning Commission recommend that City Council adopt the legislative amendments in File #CPA-13-02. This would result in the adoption of the 2012 Stormwater Master Plan as an ancillary document to the Comprehensive Plan and make amendments to the text of the Comprehensive Plan. This would formally adopt the SWMP as the basis for future City decisions related to the operations and maintenance of the City's stormwater infrastructure.

CODE AUTHORITY AND DECISION-MAKING PROCESS

The proposal is subject to the following provisions of the Milwaukie Zoning Ordinance, which is Title 19 of the Milwaukie Municipal Code (MMC).

- Section 19.902 Amendments to Maps and Ordinances
- Section 19.1008 Type V Review

The proposed amendments are subject to legislative review, which requires both the Planning Commission and City Council to consider whether the proposal complies with the code sections shown above. For legislative actions, the Planning Commission assesses the application against the review criteria, evaluates testimony and evidence received at a public hearing, and makes a recommendation to City Council. City Council will hold another public hearing to consider the Commission's recommendation, evaluate any additional testimony and evidence, and make the final decision on the proposal.

The Planning Commission has the following decision-making options:

1. Forward a recommendation to City Council to approve the proposed amendments and ordinance as proposed.
2. Forward a recommendation to City Council to approve the proposed amendments and ordinance with modifications.
3. Continue the hearing to further evaluate the proposed amendments and ordinance.
4. Deny the proposed amendments and ordinance.

Because this application is a legislative proposal, there is no deadline by which the City must make a final decision on the application. The Community Development Director has set a goal for the City to adopt the SWMP by October 2013. It is important that the SWMP be adopted by this date so that it can be used for the preparation of the 2014-2018 Capital Improvement Plan, which will begin in January 2014.

COMMENTS

Notice of the proposed amendments was posted at the Johnson Creek facility, City Hall, Ledding Library, and the Public Safety Building, and sent to Metro and the State Department of Land Conservation and Development (DLCD). No comments were received by the City.

ATTACHMENTS

Attachments are provided as indicated by the checked boxes. All material is available for viewing upon request.

		Early PC Mailing	PC Packet	Public Copies	E-Packet
1.	Draft Ordinance	☐	☒	☒	☒
	Exhibit A: Findings in Support of Approval	☐	☒	☒	☒
	Exhibit B: 2012 Stormwater Master Plan	☐	☒	☐	☒
	Exhibit C: Amendments to Comprehensive Plan (Strikeout/Underline version)	☐	☒	☒	☒
	Exhibit D: Amendments to the Comprehensive Plan (Clean version)	☐	☒	☒	☒

Key:

Early PC Mailing = paper materials provided to Planning Commission at the time of public notice 20 days prior to the hearing.

PC Packet = paper materials provided to Planning Commission 7 days prior to the hearing.

Public Copies = paper copies of the packet available for review at City facilities and at the Planning Commission meeting.

E-Packet = packet materials available online at http://www.ci.milwaukie.or.us/planning/planning-commission-83.

ATTACHMENT 1

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MILWAUKIE, OREGON, TO ADOPT FILE #CPA-13-02 WHICH WILL ADOPT THE 2010 WATER SYSTEM MASTER PLAN AS AN ANCILLARY DOCUMENT TO THE MILWAUKIE COMPREHENSIVE PLAN, AND AMEND PORTIONS OF THE MILWAUKIE COMPREHENSIVE PLAN RELATED TO WATER IN CHAPTERS 5 AND 6.

WHEREAS, Council passed Resolution #12-2012 entering into a contract with Brown and Caldwell to produce a 2012 Stormwater Master Plan.; and

WHEREAS, the Milwaukie Comprehensive Plan, Chapter 5, Public Facilities and Services Elements, Objective #3, Policy 1 calls for the City to maintain a plan to identify needed facilities to support the land uses as shown on the Comprehensive Plan land use map and within the Urban Growth Management Boundary, and for such plan to be part of the Comprehensive Plan; and

WHEREAS, the Milwaukie Engineering Department has prepared the 2012 Stormwater Master Plan with input from the City Council, Citizens Utility Advisory Board, and Planning Commission; and

WHEREAS, the 2012 Stormwater Master Plan establishes projects for the stormwater system that are necessary for the ongoing provision of adequate stormwater management in the city; and

WHEREAS, it is necessary to document future projects necessary for the ongoing provision of adequate stormwater management in order to determine the costs for maintaining the stormwater system; and

WHEREAS, the City has filed a legislative land use application, File #CPA-13-02, for Comprehensive Plan Amendments, and processed that file as a Type V legislative application per the Milwaukie Municipal Code; and

WHEREAS, the Planning Commission held a public hearing on June 25, 2013, and recommended that the City Council approve the amendments proposed in File #CPA-13-02; and

WHEREAS, the City Council held a public hearing on _____, 2013, and finds the amendments are in the public interest of the City of Milwaukie;

NOW, THEREFORE, THE CITY OF MILWAUKIE DOES ORDAIN AS FOLLOWS:

Section 1. Findings. Findings of fact in support of the proposed amendments are attached as Exhibit A.

Section 2. 2012 Stormwater Master Plan, ancillary document to the Comprehensive Plan. The 2012 Stormwater Master Plan in Exhibit B is adopted as an ancillary document to the Comprehensive Plan.

Section 3. Comprehensive Plan Text Amendment. The Comprehensive Plan text is amended as described in Exhibit C (underline/strikeout version) and Exhibit D (clean version).

Read the first time on _____, and moved to second reading by _____ vote of the City Council.

Read the second time and adopted by the City Council on _____.

Signed by the Mayor on _____.

_____
Jeremy Ferguson, Mayor

ATTEST:

_____
Pat DuVal, City Recorder

APPROVED AS TO FORM:
Jordan Ramis PC

_____
City Attorney

Document2 (Last revised 09/18/07)

Recommended Findings in Support of Approval
File #CPA-13-02, Stormwater Master Plan

Sections of the Milwaukie Municipal Code not addressed in these findings are found to be inapplicable to the decision on this application.

1. The City of Milwaukie ("applicant") has submitted an application for approval of a Comprehensive Plan amendment to adopt the 2010 Water System Master Plan (WSMP) as an ancillary document to the Milwaukie Comprehensive Plan. The applicant has also requested approval of amendments to existing text in the following sections of the Comprehensive Plan: Chapter 3, Environmental and Natural Resources - Open Spaces, Scenic Areas, and Natural Resources Element and Air, Water and Land Resources Quality Element; and Chapter 5, Transportation, Public Facilities, and Energy Conservation – Public Facilities and Services Element. The land use application for these amendments is CPA-13-02.

2. The proposal is subject to the following provisions of the Milwaukie Municipal Code (MMC):
   - MMC Section 19.902 Amendments to Maps and Ordinances

3. The application has been processed and public notice provided in accordance with MMC Section 19.1008 Type V Review. A public hearing was held on June 25, 2013, as required by law.

4. MMC Section 19.1008 Type V Review

   a. MMC Subsection 19.1008.3.A.1 requires opportunity for public comment and review.

      Opportunity for public comment and review has been provided. The Citizen's Utility Advisory Board has held two where the SWMP was discussed. The Planning Commission and City Council have each had a worksession that discussed the SWMP. Public notice in the form of email to the Neighborhood District Associations, a press release, and information on the City website have publicized the Planning Commission's hearing on the SWMP to encourage comment by any interested party.

   b. MMC Subsection 19.1008.3.A.2 requires notice of public hearing on a Type V Review to be posted on the City website and at City facilities that are open to the public. A notice of the Planning Commission's June 25, 2013, hearing was posted as required on May 24, 2014.

   c. MMC Subsection 19.1008.3.A.2 requires notice be sent to individual property owners if the proposal affects a discrete geographic area. The SWMP is a document that is applicable to the entire city, and specific property owner notice is not required.

   d. MMC Subsection 19.1008.3.B and C require notice of a Type V application to be sent to Metro 45 days prior to the first evidentiary hearing and to the Department of Land Conservation and Development 35 days prior to the first evidentiary hearing. This notice was sent to Metro on May 10, 2013, and to the DLCD on May 21, 2013.

   e. MMC Subsection 19.1008.3.D requires notice to property owners if, in the Planning Director's opinion, the application would affect the permissible uses of land for those property owners. The SWMP is a utility master plan and does not affect permissible land uses for property owners. As such, this notice is not required

   f. MMC Subsection 19.1008.4 and 5 establish the review authority and process for review of a Type V application. The Planning Commission held a duly advertised public hearing on June 25, 2013, and passed a motion recommending that the City

Council approve the Comprehensive Plan amendment. The City Council held a duly advertised public hearing on _____, 2013, and approved the Comprehensive Plan amendments.

5. MMC Section 19.902 Amendments to Maps and Ordinances

a. MMC Subsection 19.902.3.B establishes criteria for Comprehensive Plan amendments. Both map and text amendments are subject to the same criteria.

(1) Subsection 19.902.3.B.1: *The proposed amendment is consistent with the goals and policies of the Comprehensive Plan, as proposed to be amended MMC 19.902 governs the procedures for processing amendments.*

(a) Chapter 3 - Environmental and Natural Resources: Open Spaces, Scenic Areas, and Natural Resources Element

(i) Objective #2 – Natural Resources

1. Policy 3

Maintain and improve water quality of wetlands and water bodies through regulating the placement and design of stormwater drainage facilities.

The SWMP identifies a water quality retrofit opportunity within Capital Improvement Project list. The retrofit project would improve the quality of stormwater runoff draining to water bodies.

2. Policy 6

Maintain and improve existing stormwater detention and treatment standards to ensure that the impact of new development does not degrade water quality and wildlife habitat.

The SWMP identifies a water quality retrofit opportunity within a City detention pond. The retrofit project would improve the quality of stormwater runoff draining to water bodies.

(ii) Objective #4 – Water Quality, Policy 5

The City will cooperate with State and federal regulatory programs to protect domestic groundwater resources from potential pollution.

With the development of the SWMP, the City performed a groundwater protectiveness study to ensure that domestic groundwater resources were protected from pollutants associated with stormwater runoff.

(b) Chapter 5 – Transportation / Public Facilities / Energy Conservation: Public Facilities and Services Element

(i) Objective #1—Priority

To ensure that adequate levels of public facilities and services are provided to existing City residents and businesses as a first priority as urban development or growth occurs.

The purpose of the SWMP is to allow the City to identify and budget for projects that will help the City maintain an adequate stormwater system.

(ii) Objective #3 – Community Development, Policy 1

The City will maintain a Public Facilities Plan in conformance with other Plan elements and Statewide Planning Goals. The Public Facilities Plan is part of the Comprehensive Plan. The Public Facilities Plan will identify needed facilities to support the land uses as shown on the Comprehensive Plan land use map and within the Urban Growth Management Boundary.

The City does not have a consolidated Public Facilities Plan covering the City's entire infrastructure. The City has adopted various individual master plans that, in effect, substitute for having a consolidated Public Facilities Plan. Adopting the SWMP and other master plans as ancillary documents to the Comprehensive Plan furthers the intent of officially adopting the various master plans into the overall Comprehensive Plan. The SWMP identifies projects that are needed for the City to provide stormwater management based on current and planned land uses within Milwaukie's Urban Growth Management Area.

The SWMP does not impact the existing 1990 North Clackamas Urban Area Facilities Plan. This plan deals with the larger coordination of water services amongst agencies serving the North Clackamas Urban area, while the SWMP is focused on the operation and maintenance of Milwaukie's existing stormwater infrastructure.

(iii) Objective #3 – Community Development, Policy 2

Public facilities improvements should be made as properties develop. These improvements shall be consistent with the land use map and Public Facilities Plan.

The SWMP supports this policy by identifying infrastructure deficiencies. New development would be required to address those deficiencies.

A Systems Development Charge study was performed in conjunction with the SWMP. The study used the identified deficiencies as the basis for the study. New development that increased impervious surface on site would be required to fund a portion of a deficient system through a System Development Charge.

(iv) Objective #6 – Drainage and Streets

To improve the storm drainage and collection system within the City in order to alleviate seasonal flooding problems and to allow for permanent street and sidewalk improvements.

The SWMP modeled the City's stormwater collection system to identify deficiencies within the system. Once deficiencies were

identified, a conceptual Capital Improvement Project was developed and included in the list of projects that need to be constructed.

A new policy is proposed to reflect requirements for stormwater treatment for both new development and redevelopment to reflect the policies of the 2012 SWMP and to allow consistency with the adopted 2007 Public Works Standards.

(2) MMC Subsection 19.902.3.B.2: *The proposed amendment is in the public interest with regard to neighborhood or community conditions.*

The SWMP establishes projects that need to be completed to continue to provide adequate stormwater treatment and to protect the quality of the City's water bodies. The proposed amendments to the text of the Comprehensive Plan clarify the status of the stormwater system. The amendments further the public interest by enacting a document that will be used to improve the stormwater infrastructure in a timely and cost-effective manner.

(3) MMC Subsection 19.902.3.B.3: *The public need is best satisfied by this particular proposed amendment.*

The change will benefit the health and safety of the community by helping the City maintain a functioning stormwater system. The SWMP does not commit the City to any future agreements or actions that would be detrimental to the community welfare.

(4) MMC Subsection 19.902.3.B.4: *The proposed amendment is consistent with the Metro Urban Growth Management Functional Plan and relevant regional policies.*

The proposed amendments were sent to Metro for comment. Metro did not identify any areas where the proposed amendments were inconsistent with the Metro Urban Growth Management Functional Plan and relevant regional policies.

(5) MMC Subsection 19.902.3.B.5: *The proposed amendment is consistent with relevant State statutes and administrative rules, including the Statewide Planning Goals and Transportation Planning Rule.*

The proposed amendments were sent to the Department of Land Conservation and Development (DLCD) for comment. DLCD did not identify any areas where the proposed amendments were inconsistent with State statutes and administrative rules.

The Planning Commission finds that these criteria are met.

6. The SWMP has been presented in its draft form to the public and various City bodies and departments. It was discussed by the Citizens Utility Advisory Board and this group has endorsed the Stormwater Master Plan for adoption. It was presented to City Council and Planning Commission at worksessions in 2013. The SWMP has review and concurrence from the Milwaukie Engineering Department, Public Works Department, Community Development Department, Finance Department, and Planning Department.

Stormwater Master Plan

Prepared for the
City of Milwaukie, Oregon
May 31 2013

DRAFT

This is a draft and is not intended to be a final representation
of the work done or recommendations made by Brown and Caldwell.
It should not be relied upon; consult the final report

Brown AND Caldwell

6500 SW Macadam Avenue, Suite 200
Portland, OR 97239

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List of Abbreviations

2004 Plan	2004 Stormwater Master Plan
BMP	best management practice
CIP	capital improvement project
City	City of Milwaukie
CN	curve number
CUAB	Citizen Utility Advisory Board
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
ESU	effective stormwater unit
F	Fahrenheit
FTE	full-time employee
GIS	Geographic Information System
GWPD	Groundwater Protectiveness Demonstration
LIDAR	Light Detection and Ranging
LOS	level of service
MS4	municipal separate storm sewer system
NOAA	National Oceanographic and Atmosphere Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
OAR	Oregon Administrative Rules
Plan	2012 Stormwater Master Plan
ROW	right-of-way
SCS	Soil Conservation Service
SDC	service development charge
SDWA	Safe Drinking Water Act
SWMP	Stormwater Management Plan
TMDL	total maximum daily load
UIC	underground injection control
WPCF	Water Pollution Control Facility
WPCF UIC Permit	Water Pollution Control Facilities Permit for Class V Stormwater Underground Injection Control Systems

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Executive Summary

Introduction

In 2012, the city of Milwaukie (City) began efforts to update its Stormwater Master Plan. The previous Stormwater Master Plan was developed in 2004. The need for the update was driven by (1) the changing regulations for underground injection controls (UICs) and the City's National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer (MS4) permit requirements, and (2) funding challenges preventing the City from implementing capital improvement projects (CIPs) as identified in the 2004 Master Plan.

This 2012 Milwaukie Stormwater Master Plan (Plan) is intended to help the City in the development, prioritization, and scheduling of a 10-year stormwater CIP. The Plan objectives include the following:

- Update the 2004 XP-SWMM hydrologic/hydraulic model to reflect infrastructure improvement projects since 2004 and updated system information from the City's Geographic Information System (GIS).
- Evaluate the City's UICs in light of the requirements of the water pollution control facility (WPCF) UIC Permit Draft (July 2012).
- Develop CIPs and associated cost estimates to address updated UIC and NPDES regulatory requirements.
- Develop CIPs and associated cost estimates to address identified system capacity deficiencies under existing and future development scenarios. Where feasible, flood control CIPs and water quality CIPs will be integrated into a single CIP to address multiple objectives.
- Evaluate the City's current methods of tracking system assets and assessing maintenance needs.
- Evaluate current staffing levels and future staffing needs in consideration of updated regulatory requirements and proposed CIP implementation.
- Review and update the City's stormwater utility rates and system development charges (SDCs) in consideration of updated staffing needs and proposed CIPs.

This Plan documents the methods and results of the storm system capacity evaluation and the stormwater quality/retrofit assessment conducted for the City. This Plan also identifies and prioritizes capital improvement projects (CIPs) to address identified system capacity deficiencies and water quality opportunity areas. Finally, this Plan identifies stormwater program implementation needs in the form of staffing and funding recommendations.

Study Area Characteristics and Regulatory Drivers

Study Area Characteristics

The City is approximately 4.8 square miles in area. Two major tributaries to the Willamette River flow through the city: Johnson Creek, along the northern city boundary, and Kellogg Creek, along the southern city boundary.

Topography in the city is influenced by the Johnson Creek and Kellogg Creek drainage systems. The eastern portion of the city (approximately one third of the total city area), between Johnson Creek and Minthorn Creek, is topographically isolated from the major drainages and water bodies. This area includes a majority of the City's UICs (drywells).

The City is primarily developed, with only about 5 percent of the city area identified as vacant land. Vacant lands are located primarily along the southern and eastern city boundaries. Single-family residential land use is the primary land use within the city. Industrial development is located along the Highway 99E and Highway 224 corridors. Other land use categories include commercial, multifamily residential, multi-use commercial (which includes the City's town center), and public facilities (which includes parks and open space).

The City's storm drainage system is composed of approximately 50 miles of pipe and open-channel system, 800 manholes (nodes), five detention ponds, and 196 UICs.

Regulatory Drivers

The City was reissued its Phase I NPDES MS4 permit on March 16, 2012, which requires implementation of stormwater strategies to reduce pollutants to the stormwater system. One requirement of the reissued permit is completion of a stormwater retrofit assessment by July 1, 2015, in order to identify areas in the city underserved or lacking structural stormwater facilities. This effort is included as part of this Plan, and was used to identify CIPs to address water quality.

The City, along with other Oregon jurisdictions, has been working with DEQ to establish conditions of a WPCF UIC Permit Draft to regulate the discharge of stormwater to UICs. The current WPCF UIC Permit Draft (dated July 2012) requires jurisdictions to conduct a system-wide assessment of their UICs and conduct analysis of UICs if the UICs are located near water wells. This effort is included as part of this Plan, in order to identify UICs requiring decommissioning. Decommissioning of UICs is documented in the CIP.

Study Methods

Development of this Plan includes the evaluation of the capacity of the City's public stormwater drainage system, evaluation of the City's UICs, and evaluation of water quality retrofit opportunities. Each evaluation results in the identification of CIP opportunity areas that are subsequently refined, combined, and ranked to produce the final CIP list.

System Capacity Evaluation

The City's public stormwater drainage system was evaluated using a computer model to simulate hydrologic and hydraulic conditions of the system. The stormwater drainage system evaluation was conducted as an update to the system evaluation effort conducted in 2004, in order to reflect changes to the City's drainage system and allow for the simulation of a future development condition. XP-SWMM was the modeling software used to evaluate the drainage system in 2004, and it was also used for this effort. The model version was updated to XP Software's XP-SWMM v2012.

The City's study area is divided into major drainage basins associated with Johnson Creek, the Willamette River, Lower Kellogg Creek, Middle Mt. Scott Creek, and City UICs. A total of 76 subbasins contributing to a piped or channelized conveyance system and 16 subbasins contributing to area served by UICs were included in the model. The subbasin delineation developed for the 2004 model was refined and used for the 2012 Plan.

Information on the City's stormwater drainage system (i.e., pipe locations, sizes, types, etc.) was originally included in the 2004 model. Since 2004, the City has been actively updating its GIS to reflect the addition of new and identified infrastructure. The City provided these updates in GIS, and such updates were incorporated into the model. Approximately 16 miles of pipe were modeled as part of this Plan, consisting of 15-inch-diameter pipe and greater. A total of 15 system outfalls (five to Johnson Creek, one to the Willamette River, and nine to the Kellogg-Mt-Scott drainage system) were modeled.

The water quality, 2-year, 5-year, 10-year, 25-year, and 100-year design storms were simulated using XP-SWMM for current and future development conditions. Model results indicate a total of 12 flooding "problem areas" that were further evaluated as part of CIP development and included in the final CIP list.

UIC Evaluation

In conjunction with the draft UIC WPCF permit template (dated July 2012), the City is required to conduct a system-wide assessment of its UICs and retrofit/decommission UICs not compliant with conditions of the permit.

The City conducted a preliminary UIC system-wide assessment using a summary of the UIC system developed in 2005. Based on the preliminary system-wide assessment, a total of 36 UICs are identified as "at-risk" due to insufficient setback and/ or separation distances from drinking water wells (setback and separation limits are defined in the draft UIC WPCF permit template). Additional information will be needed to complete the system-wide assessment prior to submittal to DEQ. Specifically, completion of the water well location inventory and verification of depth to groundwater for select (32) UICs is needed.

An unsaturated zone groundwater protectiveness demonstration (GWPD) model was developed for the City to simulate the vertical transport of pollutants in saturated soils. Development of a GWPD addresses the City's draft permit requirements related to those "at-risk" UICs within a water well setback. Results from the GWPD include a minimum protective vertical separate distance to attenuate typical stormwater pollutants. Per the analysis, a minimum separation distance of 1 foot is recommended.

Results from the preliminary system-wide assessment and GWPD were used to determine whether retrofit or decommissioning of UICs is required. Of the 36 identified "at-risk" UICs, 33 of the UICs are determined to be compliant with permit requirements, per results of the GWPD. Three of the "at-risk" UICs are still categorized as "at-risk". As part of this Plan development, two of the remaining "at-risk" UICs are identified for decommissioning due to their location within the Plan study area and ability to address water quality objectives in addition to decommissioning.

Water Quality Retrofit Evaluation

As part of this Plan development, identification of water quality retrofit/ water quality project opportunity areas was conducted to address the City's NPDES MS4 permit requirement. Such water quality projects would be combined with identified system capacity and UIC decommissioning projects to allow proposed CIPs to address multiple objectives.

The City's water quality retrofit strategy is to target high pollutant generating areas where existing stormwater treatment is currently limited, in order to improve overall surface water quality conditions. Water quality retrofit measures will focus on the use of infiltration-based facilities (e.g., vegetated infiltration basins, rain gardens, planters) to provide runoff volume reduction in addition to conventional treatment.

Water quality opportunity areas were initially identified through a review of information from the City's GIS system including aerial photos, the location of existing water quality facilities, existing vacant areas, publically owned lands, existing and future condition land uses, storm system layout, topography, and locations where flood control or UIC decommissioning is required.

An initial water quality retrofit opportunity list was developed and reviewed with City staff. Project feasibility and practicability was discussed, and additional water quality opportunity areas were identified. Based on City feedback and field reconnaissance, a total of nine water quality retrofit projects were identified for inclusion in the final CIP list

Study Results

An integrated CIP development approach was used to develop the final CIP list. Integrated CIP development refers to the selection and design of CIPs to address multiple objectives including flood control, regulatory requirements, and water quality improvements.

The flood control, UIC decommissioning, and water quality CIP projects were consolidated to reflect consistent contributing areas. CIP design concepts and approaches were revisited during CIP integration to develop a formalized CIP design for each opportunity area. A total of 17 multi-objective CIPs are identified for prioritization and cost estimation as part of this Plan. Table ES-1 summarizes the identified CIPs. Figure ES-1 provides the general vicinity of each CIP location.

City maintenance and engineering staff scored and ranked CIPs using criteria that included historical/persistent problems, flooding/safety issues, regulatory compliance, ongoing maintenance, water quality improvement, project concurrence, and system sustainability. Each project was scored on a scale of 1 to 3, using general scoring conditions. Initial ranking results were adjusted to account for schedule or required project concurrence, resulting in the final CIP prioritization (Table ES-1).

Table ES-1. CIP Priority Ranking

Priority ranking	Ranking by score	CIP no.	CIP name	Overall score	Estimated cost, $
1	1	13-1	UIC Decommissioning on Lloyd	36	793,700
2	4	13-3	Railroad Avenue at Stanley[a]	29	357,300
3	7	13-4	Railroad Avenue Channel[a]	26	52,900
4	2	5-1	Meek Street	31	3,088,200
5	3	5-2	Harrison Street Outfall	30	619,400
6	5	14-1	Apple Storm Improvements	28	180,100
7	8	G2	36th near King Avenue	25	104,600
8	8	G3	55th near Monroe Avenue	25	23,000
8	8	13-2	Linwood Elementary	25	469,700
10	11	1-1	Willow Detention Pond Retrofit	23	68,600
10	11	G1	47th and Llewellyn	23	155,600
				High-priority project cost:	5,913,100
12	13	1-2	Stanley-Willow UIC Decommissioning	21	100,200
12	13	6-1	Washington Street	21	1,804,100
12	6	6-2	Washington Green Streets[b]	27	511,300
15	15	15-1	Hemlock Street	18	560,600
16	16	4-1	Main Street at Milport Road	17	241,200
17	17	12-1	International Way and Wister	15	90,000
				Total project cost:	9,220,500

[a]*Due to project concurrence issues and project cost savings, these CIPs are recommended for construction in conjunction with CIP 13-1.*

[b]*Due to concurrence with anticipated construction of CIP 6-1, this project was prioritized in accordance with the priority schedule for CIP 6-1.*

Study Implementation

In conjunction with development of this Plan, staffing resources and stormwater funding were assessed to determine whether adjustments to staffing and/or funding is needed in order to implement new regulatory requirements (i.e., the City's reissued NPDES MS4 permit and pending UIC WPCF permit), long-term infrastructure management, and identified CIPs.

The stormwater staffing analysis assumes that existing City staff is able to implement the current stormwater program (pre-2012 conditions). Additional activities (regulatory and CIP focused) not previously conducted by the City under current staffing were used to create the estimates of additional staff resource needs. Based on the staffing analysis, it is estimated that over the next 5 years, between 1.4 and 2.1 additional FTE will be required for maintenance staff and approximately 0.7 additional FTE will be required for engineering staff.

Staffing needs, proposed capital expenditures, and ongoing operational costs were considered in the evaluation of the stormwater utility fee and SDCs. Four levels of service (LOS) categories were developed to establish funding schemes over the 10-year CIP program. LOS considered staffing, capital projects, maintenance, regulatory compliance, proactive system replacement, and vehicle replacement. Debt and cash funding scenarios were analyzed for each of the four LOS categories. Over the 10-year CIP planning period, stormwater utility rate increases ranged from$3.30 (for the current LOS and cash funding scenario) to$25.00 (for the proactive LOS and cash funding scenario). Changes to the calculation assessment methodologies resulted in a reduction in SDC from$1,184/ESU to $765/ESU. Selection of an approved funding strategy is in progress.

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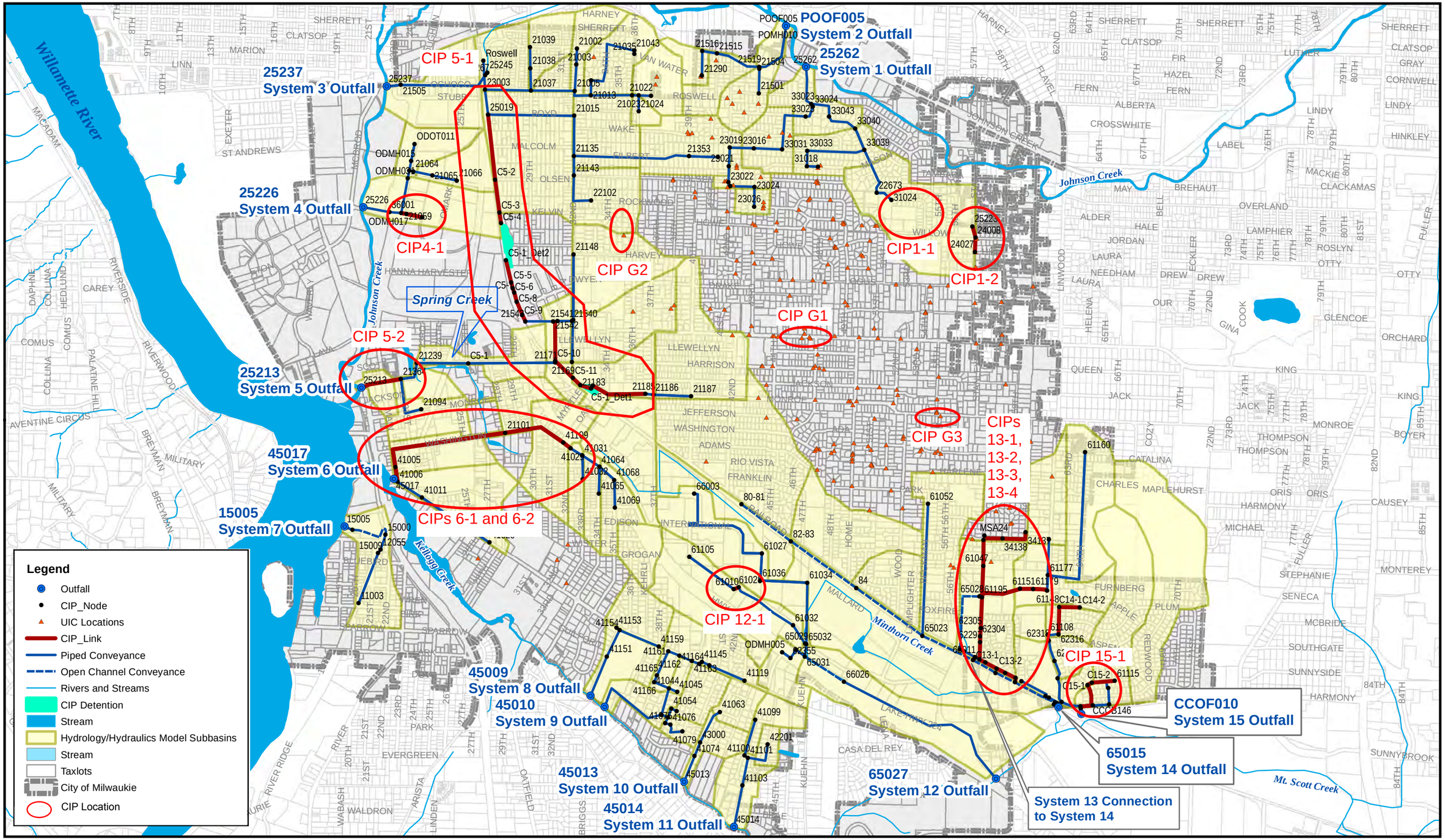

Brown AND Caldwell

March 19th, 2013

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N

CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE
CIP LOCATIONS
FIGURE ES-1

Section 1

Introduction

This 2012 Milwaukie Stormwater Master Plan (Plan) documents the methods and results of the storm system capacity evaluation and the stormwater quality/retrofit assessment conducted for the City of Milwaukie, Oregon (City). The Plan identifies and prioritizes capital improvement projects (CIPs) to address identified system capacity deficiencies and water quality opportunity areas. The Plan also identifies stormwater program implementation needs in the form of staffing and funding recommendations.

This Plan serves as an update to the City's 2004 Stormwater Master Plan (2004 Plan). The study area includes land within the city limits that drain to Johnson Creek, Kellogg Creek, Mt. Scott Creek, and the Willamette River. The study area excludes the eastern portion of the city that primarily discharges to underground injection control (UIC) facilities. The study area also excludes the area in the southwest portion of the City that directly discharges to receiving waters with very little public conveyance system.

This section provides a summary of the project need, the project objectives and approach, and a summary of how the Plan is organized.

1.1 Need for the Plan

In 2004, the city of Milwaukie updated its Stormwater Master Plan to address identified stormwater capacity deficiencies and water quality issues, driven by pending regulations associated with UICs and the City's National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) permit. CIPs developed for the 2004 Plan reflected the need to decommission a majority of City-owned UICs.

Since 2004, regulatory requirements for Milwaukie have changed. The City was reissued its NPDES MS4 permit in March 2012, which requires completion of a water quality retrofit assessment and identification of a water quality improvement project to be initiated during the permit term. In July 2012, the Oregon Department of Environmental Quality (DEQ) issued a draft *Water Pollution Control Facilities Permit for Class V Stormwater Underground Injection Control Systems* (WPCF UIC Permit Draft) that contains revised requirements for UICs (as compared to assumptions in the 2004 Plan).

In 2012, the City began efforts to update the 2004 Plan. The need for the update was driven by (1) the changing regulations for UICs and the City's NPDES MS4 permit requirements and (2) funding challenges preventing the City from implementing CIPs as identified in the 2004 Master Plan.

The City's overarching goal for the master plan update is to conduct a comprehensive evaluation of its stormwater program and stormwater system, focusing on opportunities to improve water quality and system performance, and prioritize CIPs that can be installed on a realistic implementation schedule.

1.2 Plan Objectives

This Plan is intended to help the City in the development, prioritization, and scheduling of a 10-year stormwater CIP. The Plan objectives include the following:

- Update the 2004 XP-SWMM hydrologic/hydraulic model to reflect infrastructure improvement projects since 2004 and updated system information from the City's Geographic Information System (GIS).

- Evaluate the City's UICs in light of the requirements of the WPCF UIC Permit Draft (July 2012).
- Develop CIPs and associated cost estimates to address updated UIC and NPDES regulatory requirements.
- Develop CIPs and associated cost estimates to address identified system capacity deficiencies under existing and future development scenarios. Where feasible, flood control CIPs and water quality CIPs will be integrated into a single CIP to address multiple objectives.
- Evaluate the City's current methods of tracking system assets and assessing maintenance needs.
- Evaluate current staffing levels and future staffing needs in consideration of updated regulatory requirements and proposed CIP implementation.
- Review and update the City's stormwater utility rates in consideration of updated staffing needs and proposed CIPs.

1.3 Approach

The approach for developing the City of Milwaukie's updated Stormwater Master Plan (2012 Plan) is summarized in Figure 1-1. This approach was developed to meet the City's objectives, described above, in consideration of the changing regulatory drivers during the project schedule (i.e., the NPDES MS4 permit reissuance in March 2012 and the WPCF UIC Permit Draft in July 2012).

As shown in Figure 1-1, tasks were conducted in parallel to minimize schedule implications associated with data collection and system assessment efforts. Highlights of the project approach include the following:

1. Data collection was initiated at the beginning of the project but continued throughout the project duration in order to continually refine the XP-SWMM hydrologic and hydraulic model and provide information to aid in the UIC risk evaluation, CIP development, and stormwater utility rate evaluation.
2. CIP locations are identified to collectively address flood control, water quality retrofit, and UIC decommissioning needs. Development of a comprehensive CIP includes a water quality retrofit list to meet NPDES MS4 permit requirements.
3. The staffing analysis was completed following CIP development and prioritization, to reflect the maintenance and engineering staff time needed to implement proposed projects.
4. The utility rate evaluation and system development charge (SDC) evaluation was initiated after CIP development and completion of the staffing analysis, to ensure that the financial levels of service (LOS) analyzed correspond to specific program and project objectives.

Coordination with City staff was ongoing throughout the project duration in order to validate and verify assumptions related to the system configuration (e.g., elevations, naming, and functionality) and stormwater program implementation issues and concerns.

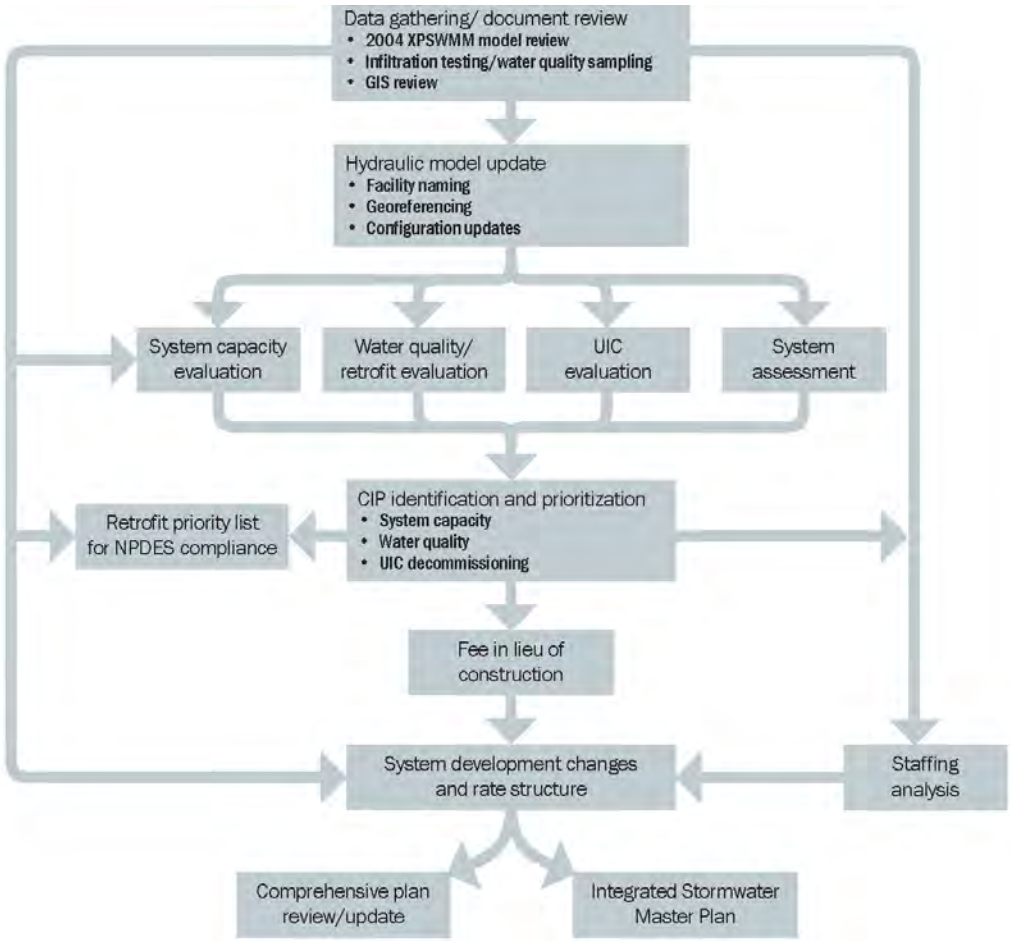

Figure 1-1. Stormwater Master Plan approach

1.4 Plan Organization

Following this introductory Section 1, the 2012 City of Milwaukie Stormwater Master Plan Update is organized as follows:

- Section 2 includes a description of the study area characteristics.
- Section 3 describes the modeling methods and results of the stormwater system capacity evaluation and includes identification of flood control CIP locations.
- Section 4 describes the results of the UIC risk evaluation including identification of UICs to decommission as part of the CIPs.
- Section 5 describes the water quality retrofit assessment and identification of water quality CIP locations.
- Section 6 summarizes the integrated CIP strategy to address system capacity deficiencies, water quality objectives, and UIC decommissioning needs.
- Section 7 describes the CIP prioritization approach.
- Section 8 describes the CIP implementation approach including results of the staffing analysis and stormwater utility rate evaluation.

Appendices A through G provide supporting information in conjunction with Sections 2 through 8.

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Section 2

Study Area Characteristics

This section includes an overview of study area characteristics including location, topography, soils, land use, climate and rainfall, the stormwater collection system, water quality conditions and regulations, and groundwater/UIC system status.

2.1 Location

The city of Milwaukie is located in the northern portion of Clackamas County, Oregon (Figure 2-1). The city is bordered by the city of Portland to the north, unincorporated Clackamas County to the east, Oak Lodge to the south, and Johnson Creek and the Willamette River to the west.

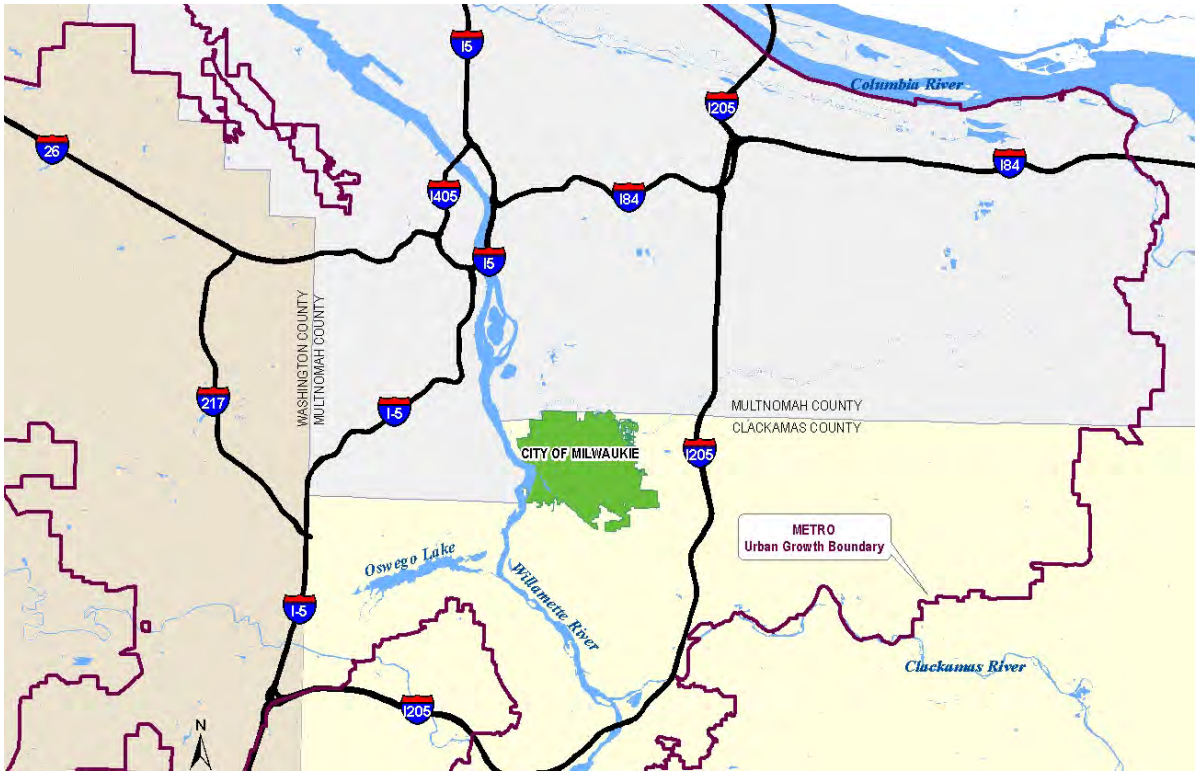

Figure 2-1. Vicinity map

The city is approximately 4.8 square miles in area. Two major tributaries to the Willamette River flow through the city: Johnson Creek, along the northern city boundary, and Kellogg Creek, along the southern city boundary. Smaller tributaries within the city limits include Minthorn Creek (a tributary to Kellogg Creek in the eastern portion of the city), Mt. Scott Creek (a tributary to Kellogg Creek in the eastern portion of the city), and Spring Creek (a tributary to Johnson Creek that enters Johnson Creek close to its confluence at the Willamette River).

2.2 Topography

The topography in the city of Milwaukie is influenced by the Johnson Creek and Mt. Scott/Kellogg Creek drainage systems. Johnson Creek runs west along the city's northern boundary to its confluence with the Willamette River. Area from the northern and western portions of the city (approximately one third of the total city area) discharges to the Johnson Creek drainage system, with elevations ranging from 30 to 190 feet.

Mt. Scott Creek, a tributary to Kellogg Creek, runs west along the southeastern city boundary, combining with Kellogg Creek south of the city, just outside of the city limits. Kellogg Creek runs west along the southwestern city boundary to its confluence with the Willamette River, approximately 1,500 feet south of the Johnson Creek confluence. Area from the southern portion of the city (approximately one third of the total city area) discharges to the Kellogg-Mt. Scott drainage system, with elevations ranging from 30 feet to 200 feet.

The eastern portion of the city (approximately one third of the total city area), between Johnson Creek and Minthorn Creek, is topographically isolated from the major drainages and water bodies. This area includes a majority of the City's UICs (drywells). Limited stormwater infrastructure (e.g., pipes, catch basins) is present in this area.

Figure 2-2, located at the end of this section, illustrates the topography in the city of Milwaukie.

2.3 Soils

According to the National Resources Conservation Service (NRCS) Soil Survey, the predominant soil types in the city of Milwaukie are Latourell and Quatama loam, Woodburn silt loam, and Wapato silty clay loam. The Latourell loam has moderate soil permeability (hydrologic soil group B), and the Quatama loam, Wapato silty clay loam, and Woodburn silt loam have slow soil permeability (hydrologic soil group C). The eastern portion of the city, where the majority of UICs are located, is primarily composed of Latourell loam.

Soil classification is an important characteristic to consider when determining runoff flow rates and volumes. Soil classification was used to assign pervious area runoff curve numbers (CN) for hydrologic calculations. CN values were assigned for subbasins and values were calibrated as part of the 2004 Plan. CN values were not updated as part of this Plan.

2.4 Climate and Rainfall

The city of Milwaukie experiences a similar temperate climate to the surrounding Portland metropolitan area, with relatively warm, dry summers and mild, wet winters. Winter temperatures average approximately 40 degrees Fahrenheit (F) and summer temperatures average approximately 70 degrees F.

The average annual precipitation for the Portland metropolitan area ranges from 37 to 43 inches, with most of the rainfall occurring between November and April.

2.5 Land Use

The city of Milwaukie is primarily developed, with only about 5 percent of the city area identified as vacant lands. Vacant lands are scattered throughout the city, primarily along the southern and eastern city boundaries.

Single-family residential land use is the primary land use within the city. A significant amount of industrial development is located along the Highway 99E and Highway 224 corridors. Other land use categories include commercial, multifamily residential, multi-use commercial (which includes the City's town center), and public facilities (which includes parks and open space).

City-provided land use coverage is used to assign the impervious area percentages applicable to existing and future development conditions for hydrologic modeling. All vacant lands are assumed to be developed in the future condition.

Figure 2-3, at the end of this section, shows the land use coverage within the city of Milwaukie.

2.6 Drainage System

Per the City-provided GIS, the City's storm drainage system is composed of approximately 50 miles of pipe and open-channel system, 800 manholes (nodes), five detention ponds, and 196 UICs. Approximately 16 miles of pipe were modeled as part of this Plan, composed primarily of 15-inch-diameter pipe and greater.

Johnson Creek, along the city's northern and western boundaries, and Kellogg-Mt. Scott Creek, along the city's southern boundary, are the City's primary receiving waters that receive piped drainage. A total of 15 system outfalls (5 to Johnson Creek, 1 to the Willamette River, and 9 to the Kellogg-Mt-Scott drainage system) define 15 piped systems that discharge to receiving waters.

Subbasins were originally delineated as part of the 2004 Plan. The same delineation was used for this plan with some minor adjustments to account for variations in drainage patterns (see Section 3.2.2.1). Several subbasins were included in the hydrologic modeling effort only, that have limited piped infrastructure and/or mainly discharge to UICs. Hydrologic information for these subbasins may be used to support future UIC decommissioning efforts or infrastructure improvements. There were also several subbasins that were not reflected in the hydrologic or hydraulic modeling effort. Review of these subbasins indicates that stormwater runoff enters the receiving water directly and does not enter a modeled conveyance system.

For purposes of the hydraulic modeling effort, the drainage system information was developed using the hydraulic model prepared for the 2004 Plan and City-provided GIS data of existing stormwater infrastructure, as-built information, aerial imagery, and anecdotal information from City staff.

Figure 2-4, located at the end of this section, shows the modeled stormwater drainage system including pipes, open channel, and UICs. Only one of the detention facilities, Roswell Detention Pond, was included in the model. Figure 2-4 also shows the subbasin delineation.

2.7 Stormwater Quality

The Oregon DEQ is responsible for implementing provisions of the Federal Clean Water Act (CWA) pertaining to stormwater discharge and surface water quality. DEQ conducts permitting for activities that discharge to surface waters, establishes water quality criteria for water bodies based on designated beneficial use, and conducts water quality assessments and evaluations to determine whether a water body adheres to water quality standards.

Section 303(d) of the CWA requires states to develop a list of water bodies that do not meet water quality standards. DEQ develops such a list for Oregon, which is used to identify and prioritize water bodies for development of a pollution reduction plan or total maximum daily load (TMDL). TMDLs identify the assimilation capacity of a water body for a particular pollutant and establish pollutant load allocations for sources of discharge to such water body.

Table 2-1 identifies the 303(d) parameters and TMDLs that are applicable to the City of Milwaukie. The Willamette River TMDL includes Kellogg Creek, Mt. Scott Creek, and Minthorn Creek as tributaries.

Table 2-1. Summary of TMDL and 303(d) Listed Streams for Milwaukie

Monitored water body	Bacteria	Temperature	Mercury	PCBs	PAHs	DDE/DDT	Dieldrin	Iron	Manganese
TMDLs									
Willamette River (and tributaries) (2006)	✓	✓	✓						
Johnson Creek (2006)	✓	✓	✓			✓	✓		
Additional 303(d) listed streams/parameters									
Johnson Creek				✓	✓				
Willamette River (lower) and tributaries				✓	✓	✓	✓	✓	✓

The City implements requirements of its Willamette River and Johnson Creek TMDLs under its Willamette River TMDL Implementation Plan (effective date March 2009). Activities described in the Willamette River TMDL Implementation Plan address temperature and bacteria pollutant sources.

2.8 Regulatory Drivers

Changes to the City's water quality regulations, affecting stormwater discharges to surface water and groundwater, and associated changes to the City's NPDES MS4 and UIC WPCF permit, were primary drivers for updating the 2004 Plan.

2.8.1 NPDES MS4 Permit

The City was reissued its Phase I NPDES MS4 permit on March 16, 2012. The City's reissued NPDES MS4 permit contains a variety of requirements to address the following categories/ activities:

- Illicit Discharge Detection and Elimination
- Industrial and Commercial Facilities
- Construction Site Runoff Control
- Public Education and Outreach
- Public Involvement
- Post-Construction Site Runoff Control
- Pollution Prevention for Municipal Operations
- Stormwater Management Facility Operations and Maintenance

Implementation of the NPDES MS4 permit is described in the City's Stormwater Management Plan (SWMP) (effective date May 2012). The SWMP includes measurable goals, responsible parties, and tracking measures to assess progress of implementing the activities (best management practices [BMPs]) to address requirements. The NPDES MS4 permit and the City's SWMP require the City to select, design, install, and maintain structural stormwater facilities for water quality improvement. Figure 2-5 at the end of this section shows the existing structural stormwater facility coverage in the city.

Over the permit term, the City is required to construct additional structural control facilities to improve water quality. The City's NPDES MS4 permit requires the City to complete a stormwater retrofit assessment by July 1, 2015, to identify areas in the city underserved or lacking structural stormwater facilities. Additionally, the City's NPDES MS4 permit requires calculation of TMDL pollutant load reduction benchmarks, to show progress toward meeting applicable TMDL requirements. Such progress is observed through implementation of structural stormwater facilities and pollutant source control measures (e.g., public education, street sweeping, etc.) that are targeted at addressing TMDL pollutants (see Table 2-1).

2.8.2 UIC WPCF Permit

The City uses 196 (recorded) UIC devices to manage stormwater runoff from public rights-of-way (ROW). A UIC is any facility designed for the subsurface infiltration of fluids. Figures 2-4 and 2-5 show the locations of UICs in the city.

UICs are regulated by DEQ under the Safe Drinking Water Act (SDWA). Because the City's UICs infiltrate only stormwater from public ROWs, DEQ considers them to be Class V injection systems under Oregon Administrative Rules (OAR) 340-044-0011(5)(d).

The City, along with other Oregon jurisdictions, has been working with DEQ to establish conditions of a WPCF UIC Permit Draft to regulate the discharge of stormwater to UICs. DEQ issued a WPCF UIC Permit Draft in July 2012. The UIC WPCF Permit Draft contains revised requirements for UICs, when compared with the assumptions of the 2004 Plan. Unlike the assumptions in 2004, UICs with limited separation distance to groundwater are allowed, thus changing the need to implement a majority of CIPs from the 2004 Plan that were related to the decommissioning of UICs.

Additionally, the WPCF UIC Permit Draft requires jurisdictions to conduct a system-wide assessment of their UICs and conduct analysis of UICs if the UICs are located near water wells. Additional detail is provided in Section 4.

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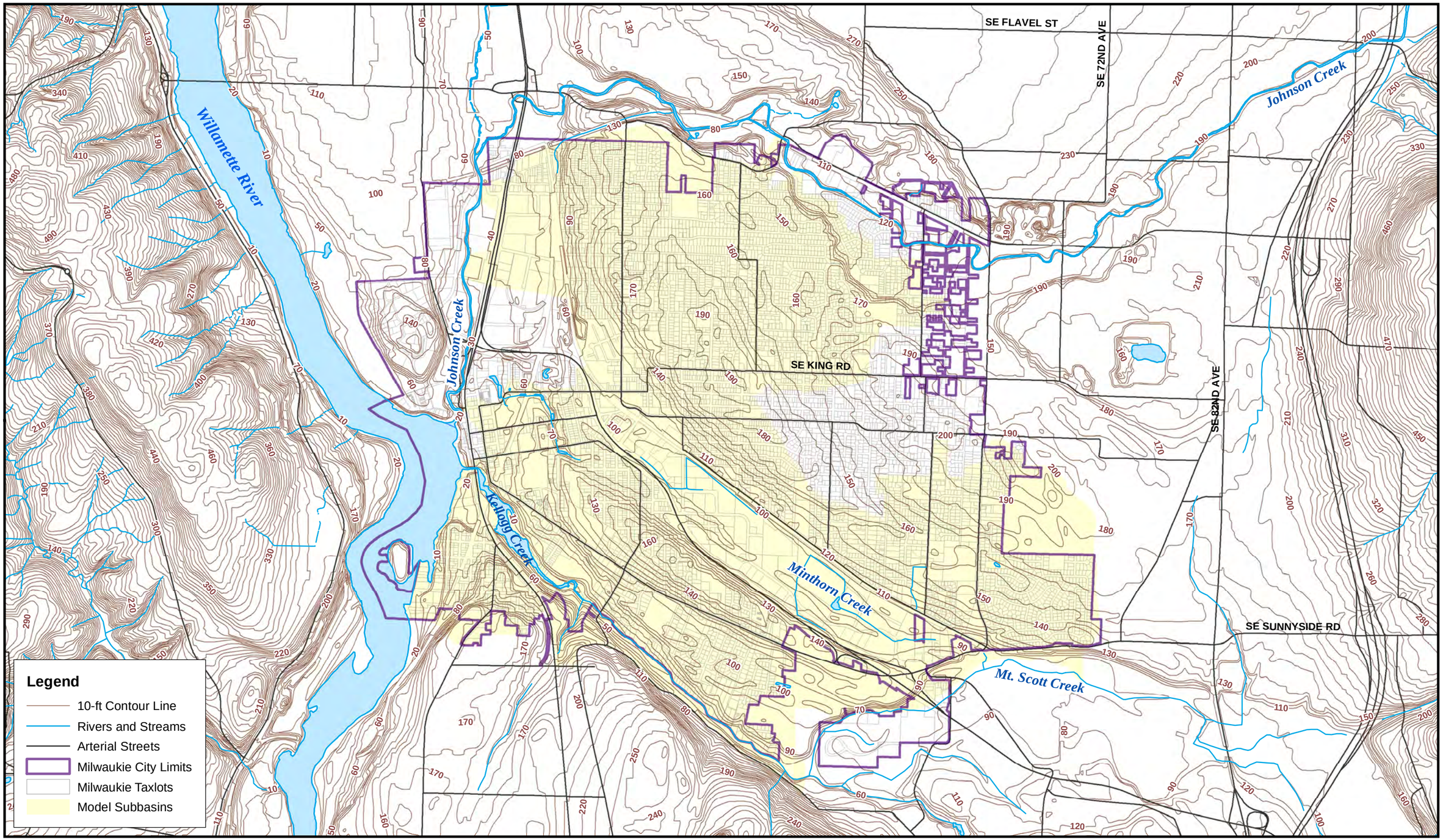


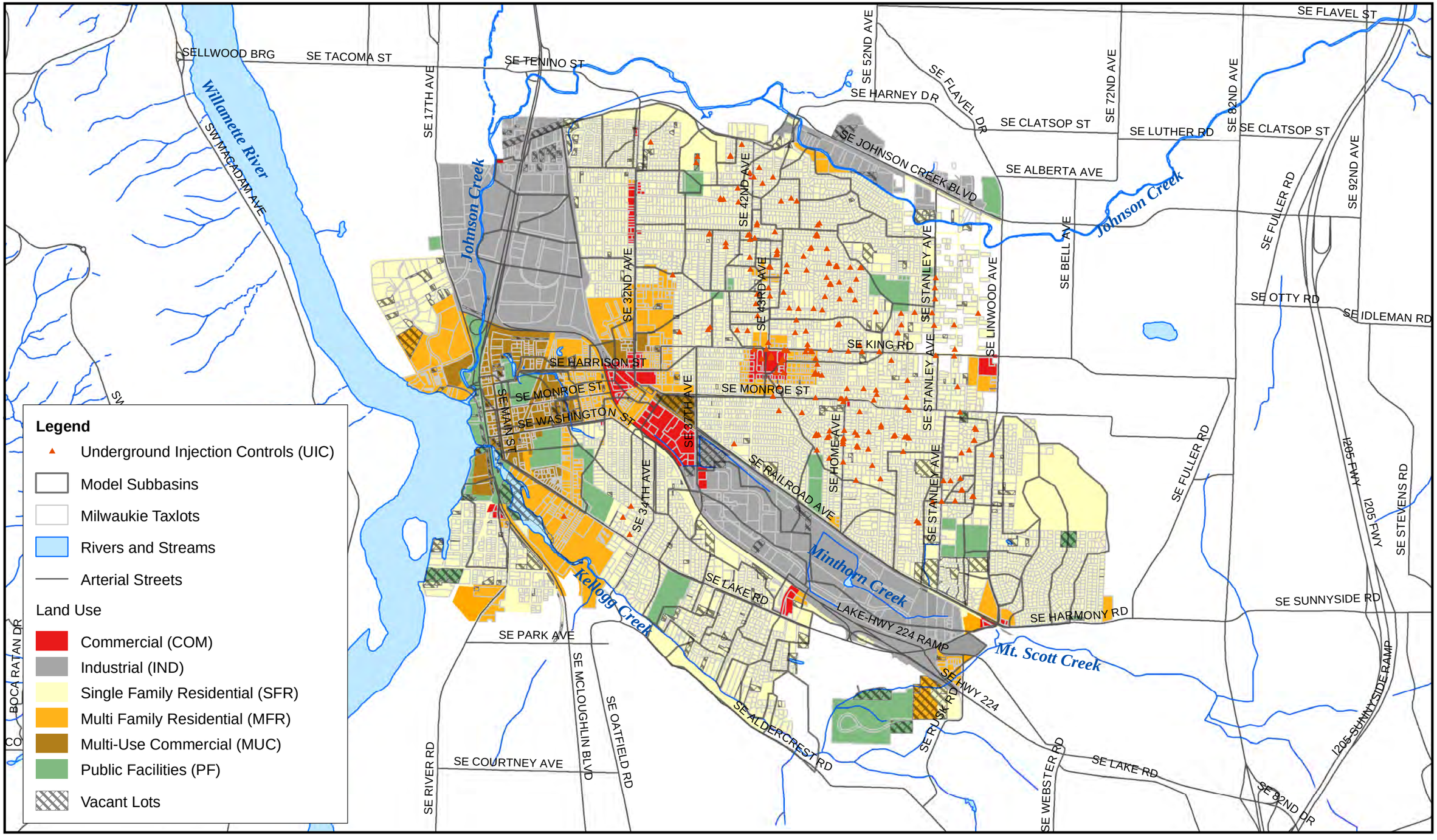
Brown AND Caldwell

March 19th, 2013

0 2,000 4,000 Feet

N

CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE
TOPOGRAPHY
FIGURE 2-2



Legend

- Underground Injection Controls (UIC)
- Model Subbasins
- Milwaukie Taxlots
- Rivers and Streams
- Arterial Streets

Land Use

- Commercial (COM)
- Industrial (IND)
- Single Family Residential (SFR)
- Multi Family Residential (MFR)
- Multi-Use Commercial (MUC)
- Public Facilities (PF)
- Vacant Lots

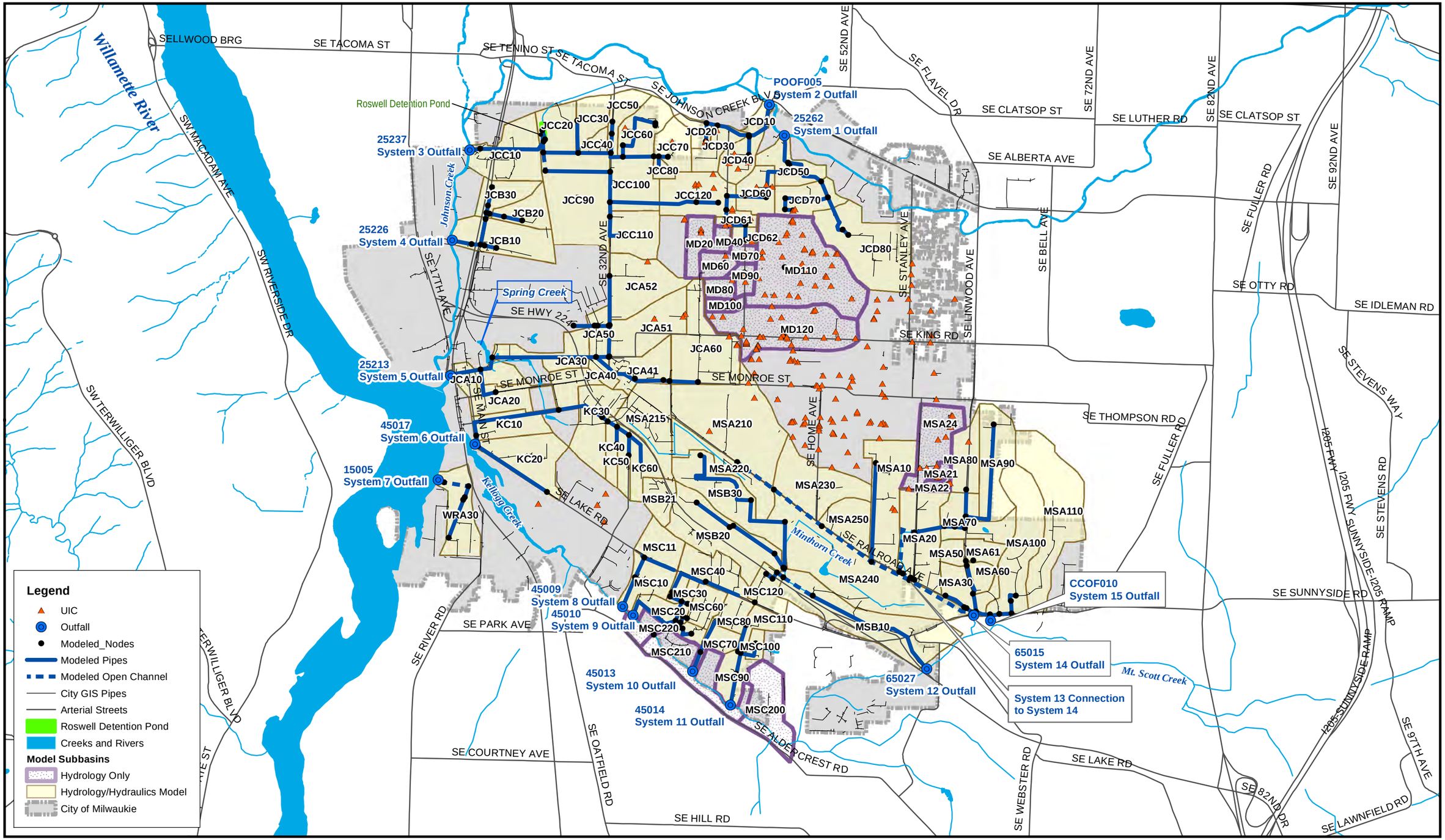
Brown AND Caldwell

March 19th, 2013

0 2,000 4,000 Feet

N

CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE
LAND USE
FIGURE 2-3



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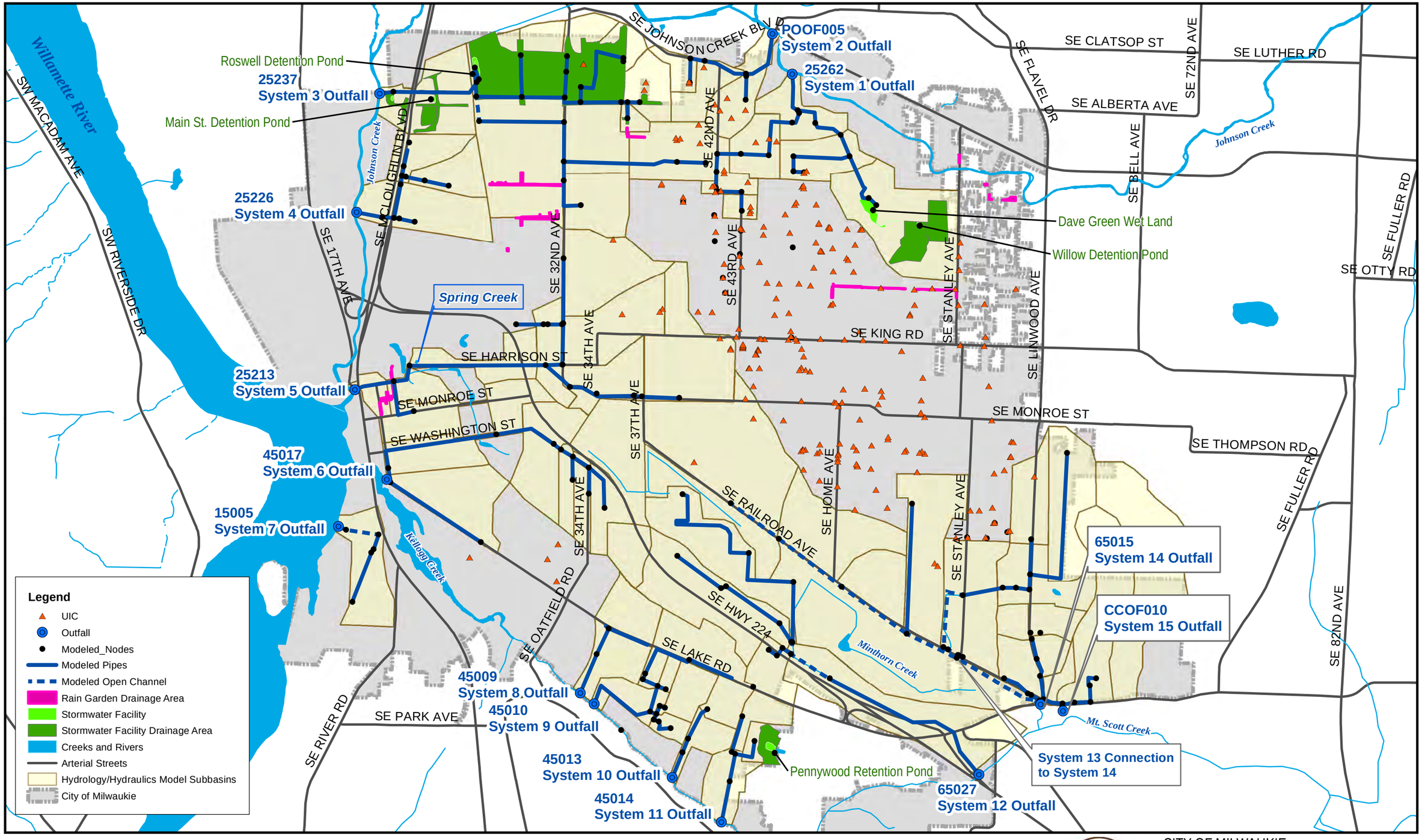
March 19th, 2013

CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE
MODELED SYSTEM
FIGURE 2-4



Brown AND Caldwell

March 19th, 2013

0 1,500 3,000 Feet

N

CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE

BMP COVERAGE
FIGURE 2-5

Section 3

Storm System Capacity Evaluation

To identify flooding problems and opportunities for CIPs, the City's public stormwater drainage system was evaluated using a hydrologic and hydraulic model. The stormwater drainage system was evaluated under existing and future development scenarios. This section provides a description of hydrologic and hydraulic modeling methods used for the system capacity evaluation and provides a summary of results.

3.1 City of Milwaukie Study Area

As described in Section 2, this Plan reflects an update to the Stormwater Master Plan effort conducted in 2004. Geographic coverage of the study area was not changed from the 2004 Plan. The total study area is approximately 2,165 acres and excludes a portion of city, along the eastern city boundary, that discharges solely to UICs. The study area also excludes the area in the southwestern portion of the city that directly discharges to receiving waters with very little public conveyance system.

The majority of the study area (approximately two thirds) is collected and conveyed in a pipe or open-channel system and outfalls to Johnson Creek to the north and west, Kellogg Creek to the south, and Mt. Scott Creek to the southeast. A small area in the southwest portion of the city discharges directly to the Willamette River.

3.2 XP-SWMM Model Development

To evaluate the capacity of the City's stormwater drainage system, the computer model previously developed for the 2004 Plan was utilized. XP-SWMM was the modeling software used to evaluate the drainage system in 2004 and was also used for this effort. The model version was updated to XP Software's XP-SWMM v2012.

The 2004 model was updated to reflect changes to the City's drainage system since 2004 and to allow for the simulation of a future development condition. General model adjustments include the following:

- The addition of a future development condition to reflect the City's comprehensive plan designated land use for each modeled subbasin
- Refinement to the modeled open-channel conveyance cross sections along Railroad Avenue
- Updated pipe size and elevation information, per the City's GIS and anecdotal information provided by City staff
- The addition of X and Y coordinates to the modeled system
- Adjustment of the model node names to coordinate with the City GIS naming convention

Detail related to model adjustments is provided in the following sections. The Plan did not include field survey information or revisions to the subbasin hydrologic parameters, with the exception of the future impervious percentages assigned to reflect the City's comprehensive plan designated land use.

Model input parameters and modeling methods listed below are described in the following sections:

- Meteorological Data (e.g., rainfall) (Section 3.2.1)
- Hydrologic Data (e.g., area, impervious area [as a percent], infiltration parameters) (Section 3.2.2)
- Hydraulic Data (e.g., pipe size, material, length and invert elevations) (Section 3.2.3)

3.2.1 Meteorological Data

Design storms are precipitation patterns typically used to evaluate the capacity of storm drainage systems and design capital improvements for the desired level of flood protection.

Design storms evaluated for this study include the water quality, 2-year, 5-year, 10-year, 25-year, and 100-year, 24-hour duration design storms. The 2004 Plan did not assess the water quality, 2-year, or 5-year design storms.

The rainfall depths for these design storms were based on isopluvial maps published in the National Oceanographic and Atmosphere Administration (NOAA) Atlas 2, Volume X. The rainfall distribution for these design storms are based on the Soil and Conservation Service (SCS) 24-hour, Type IA distribution, which is applicable to western Oregon, Washington, and northwestern California.

Table 3-1 lists the precipitation depths for each design storm used in the model.

Table 3-1. Design Storm Depths

Design storm event	Rainfall depth, inches
Water quality, 24-hour	1.0
2-year, 24-hour	2.4
5-year, 24-hour	3.0
10-year, 24-hour	3.5
25-year, 24-hour	4.0
100-year, 24-hour	4.7

3.2.2 Hydrologic Data

This section includes a summary of subbasin delineations and model input parameters used to define the hydrologic characteristics of the subbasins.

3.2.2.1 Subbasin Delineation

The City's study area is divided into major drainage basins associated with Johnson Creek, the Willamette River, Lower Kellogg Creek, Middle Mt. Scott Creek, and City UICs. The major drainage basins are subdivided into 76 subbasins contributing to a conveyance system and 16 subbasins, which currently contribute to UICs and were modeled for hydrology only. Subbasins are named based on their respective major drainage basin.

The subbasin delineations used in the model are based on the 2004 model, except where the City provided additional information that supported subdividing the original subbasins to incorporate updated pipe system information (e.g., CIPs that were constructed and UICs that were decommissioned). Additionally, in some cases, the inlet node (discharge location) to the City's modeled system was reassigned for a subbasin to reflect actual drainage conditions and topographic constraints.

Table 3-2 summarizes the modifications to the 2004 subbasin delineation.

Table 3-2. Modifications to 2004 Milwaukie Subbasin Delineation		
2004 subbasin name	2012 subbasin name	Description of change
MD30	JCD61	Drainage from MD30 was incorporated into the piped system following installation of a portion of CIP 1 per the 2004 Master Plan.
MD50	JCD62	Drainage from MD50 was incorporated into the piped system following installation of a portion of CIP 1 per the 2004 Master Plan.
MSC10	MSC10, MSC11	Drainage from MSC10 from the 2004 model was subdivided into MSC10 and MSC11 to model the newly constructed pipe system on Lake Road.
Not reported	MSA 250	Topography for this subbasin resulted in changing the inlet node from 82–83 to 84.
Not reported	MSA215	Topography for this subbasin resulted in changing the inlet node from 78–79 to 66003.
Not reported	MSA240	Topography and site conditions for this subbasin resulted in changing the inlet node from 84 to 65039.
Not reported	Subbasins modeled for hydrology only	Flow (and associated input parameters) for subbasins which did not contribute to a piped system were not included in the 2004 Plan documentation. These subbasins are included in the hydrologic results tables (Appendix A).

3.2.2.2 Input Parameters

The SCS CN hydrology method is used in XP-SWMM to generate a stormwater runoff hydrograph for each subbasin. This method requires that the following parameters are specified for each subbasin:

- Subbasin name
- Area of subbasin (acres)
- Hydraulically connected impervious percentage (percent)
- Average ground slope (dimensionless, ft/ft)
- Pervious area CN (dimensionless)
- Time of concentration (minutes)
- Initial abstraction (dimensionless, in./in.)

For each parameter, a discussion is presented below describing the methods that were used to generate the values used in XP-SWMM. If the model deviated from the 2004 model assumptions, the changes are listed.

3.2.2.2.1 Subbasin Name

The subbasin name was assigned using a two-letter abbreviation for the major basin (e.g., JC for Johnson Creek). Major basin names and codes are shown in Table 3-3. A third letter was used to identify each significant drainage area within the major basin. Following the two- or three-letter abbreviations, numbers starting with 10 and increasing in increments of 10 were assigned to each subbasin. In cases where subbasins were subdivided following the 2004 Plan, the unit digit was used to differentiate subbasins.

Table 3-3. Basin Names and Codes	
Basin name	Basin code
Johnson Creek	JC
Lower Kellogg Creek	KC
Milwaukie Drywell	MD
Middle Mt. Scott	MS
Willamette River	WR

3.2.2.2.2 Subbasin Area

The subbasin areas were calculated using GIS based on the 2004 subbasin delineation and associated adjustments described in Section 3.2.2.1.

3.2.2.2.3 Subbasin Impervious Percentage

Effective impervious percentage is the portion of impervious area that is directly connected to the drainage collection system. For example, curb-and-gutter streets are directly connected to the drainage collection system and represent "effective impervious area." However, a sidewalk that is separated from the street by vegetation is not considered to be directly connected because runoff has the opportunity to infiltrate. The City does not have citywide specific information for effective impervious surface so instead bases impervious estimates on land use, and assumes that the amount of impervious area in a subbasin would vary depending on land use.

The 2004 Plan and model used an area-weighted impervious percentage for each subbasin based on the land use coverage. In order to calibrate the model, the impervious percentage for each subbasin was adjusted to match the model results with City-observed flooding during a storm event on January 31, 2003. The area-weighted impervious percentages were reduced by 80 percent in some subbasins in order to match model results with locations of City-observed flooding. The 2004 Plan assumed full buildout conditions; therefore, only the adjusted impervious percentages following calibration of the model were used in model simulations. The adjusted impervious percentage from the 2004 Plan and model was used to reflect existing development conditions for this Plan.

Although the 2004 Plan assumed the City was fully built out, redevelopment activities and street improvements typically increase the "effective impervious area" to the storm drainage system. Currently, many areas of City lack curb and gutter streets, but street improvements would add curb and gutter. Infill redevelopment activity reflects construction of larger, new houses on the same size lot as the original, smaller house. These changes increase the amount of impervious surface and the connectivity of the impervious surface.

In order to develop the Plan to address the potential for fully connected, effective impervious surface throughout the city, an area-weighted impervious percentage was calculated for each subbasin using the land use-based impervious percentages from the 2004 Plan (Table 3-4). Per coordination with the City, the average impervious percentage of industrial land was adjusted to 75 percent from 65 percent for this effort.

Table 3-4. Impervious Percentage and Land Use Coverage			
Land use	Abbreviation	Average impervious percentage	Percentage of the study area
Single-family residential	SFR	35	63%
Multifamily residential	MFR	75	10%
Industrial	IND	75	15%
Commercial	COM	75	3%
Multi-use commercial	MUC	75	4%
Public facilities	PF	45	6%

3.2.2.2.4 Subbasin Slope

The subbasin slope is the average slope along the pathway of overland flow to the inlet of the drainage system. The slope for each subbasin is based on the 2004 model and Plan, but for new or subdivided subbasin (see Section 3.2.2.1), the slope was calculated from the digital topographic information contained in the GIS.

3.2.2.2.5 Pervious Area Curve Number

The pervious area CN is a dimensionless number that depends on hydrologic soil group, cover type, and antecedent moisture conditions.

Runoff CNs for pervious areas were estimated for the 2004 Plan from typical runoff CN tables provided in the SCS Technical Release 55, titled “Urban Hydrology for Small Watersheds”, dated June 1986. All CN values assume average antecedent moisture conditions. The CN was another calibration parameter per the 2004 Plan and model and was adjusted to match City-observed flooding. The final pervious CN assigned to each subbasin is based on the 2004 model and Plan and used for both existing and future development condition model scenarios.

3.2.2.2.6 Time of Concentration (Units = Minutes)

The time of concentration is the time for runoff to travel from the most distant point of the watershed to the point in question. The time of concentration is computed by summing all the travel times for consecutive components of the drainage system (i.e., sheet flow, shallow concentrated flow, open-channel flow, and pipe flow). The time of concentration for each subbasin is based on the 2004 model and Plan, but for new or subdivided subbasins (see Section 3.2.2.1), the time of concentration was recalculated using the digital topographic information contained in the GIS.

3.2.2.2.7 Initial Abstraction

Initial abstraction defines the fraction of precipitation that is lost to interception and depression storage before runoff is generated in the model by precipitation which is not infiltrated. A value of 0.2 was used for all subbasins, consistent with the 2004 Plan and model.

3.2.3 Hydraulic Data

This section describes the naming convention used in the Plan for conveyance system components and describes the model input parameters used to characterize the hydraulic characteristics of the system. The hydraulic input parameters are based primarily on 2004 Plan and model, and any revisions are discussed below.

3.2.3.1 Conveyance System (Conduit) Naming Convention

The conveyance system naming convention employed during the 2004 Plan was used. Conveyance system naming is based on the associated subbasin for the segment; pipe segments within the same subbasin are then defined with a letter designation (e.g., JCD50b). The letter designation is assigned from downstream (letter a) to upstream within the subbasin (letter b, c, d, etc.).

3.2.3.2 Input Parameters

The hydraulic analysis of the City's piped conveyance and open-channel conveyance system requires the definition of various parameters listed below:

- Node naming convention and georeferencing
- Addition of modeled nodes and modeled system refinement
- Ground and invert elevations
- Pipe shape, size, and material
- Length of segment (feet)

Generally, the hydraulic input parameters defined in the 2004 Plan and model were maintained. However, in some cases, adjustments to the hydraulic input parameters from the 2004 Plan and model were made. Adjustments include (1) updated pipe size, channel cross sections, and elevation information per new system information; (2) updated node identification (naming) to correspond to updated City GIS; and (3) georeferencing the modeled nodes (i.e., assign X and Y coordinates in the model) such that the modeled system can be accurately mapped and correspond to the City's GIS.

3.2.3.2.1 Node (Manhole) Naming Convention and Georeferencing

Since 2004, the City has been actively updating its GIS to reflect the addition of new and identified infrastructure. As such, some node names originally used in the 2004 Plan and model are not reflected in the City's GIS.

In order to georeference the model nodes to correspond to the City's GIS and create maps from the model reflecting the modeled system, the node naming convention had to be resolved between the 2004 Plan and model and the City's GIS. The version of the XP-SWMM model used for the 2004 Plan does not have the same mapping capability and conformance with GIS as XP-SWMM v2012, which was used for this Plan and model.

From the 2004 Plan and model, node names consistent with the City's current (2012) GIS were maintained. Nodes from the 2004 Plan and model that did not have consistent names per the City's GIS were reviewed in detail. In most cases, a corresponding node and node name was identified from the City's GIS, and the node name was updated. In a few cases, a representative, corresponding node could not be identified in the City's GIS. In those cases, the City conducted field investigations to confirm whether a node was in fact present. If present, the City's GIS was updated and a node name assigned to the 2004 model that was consistent with the City's GIS.

Table 3-5 summarizes the node naming changes from the 2004 model to the current 2012 model. Once the node names were updated, X and Y coordinates from the City's GIS were assigned to the model nodes.

Table 3-5. Modifications to Model Node Names	
2004 model	2012 model
301	21505
22165	21340
61105	61105
42292	41137
405	ODMH015
403	ODMH016
400	ODMH017
61038	ODMH005
61037	ODMH004
21520	21519
21504	23047
21526	POMH001
25271	POOF005
25270	POMH010
22673	31023
66009	66023
62175	CCCB159
62174	CCCB161
65016	CCOF010
62171	CCCB146
62166	CCCB154
66007	66026
104	CCIN002
26009	36001
404	ODMH031

3.2.3.2.2 Addition of Modeled Nodes and Modeled System Refinement

The overall coverage of the 2004 Plan and model was not increased for this Plan. However, the modeled system was refined and nodes were added for consistency with the City's GIS. These modifications were conducted for the following:

- Inclusion of constructed elements of CIP 1: Brookside Storm Improvements and CIP-2 Meek Street and 32nd Avenue Pipe Improvements from the 2004 Master Plan.
- Inclusion of as-built information associated with the Lake Road project.
- Refinement of the modeled system to reflect changing pipe sizes along a singled modeled segment.
- Removal of Kellogg Creek from the model, to improve model stability and because CIP development was not anticipated for Kellogg Creek itself.

- Establishment of a fixed tailwater elevation at the top of pipe for outfalls on Johnson Creek and Kellogg Creek. Outfalls on Mt. Scott Creek are modeled as freely discharging.
- Inclusion of the Railroad Avenue channel.

3.2.3.2.3 Ground and Invert Elevations

Ground and invert elevations from the 2004 model were maintained. For nodes adjusted or added to the model (see description in Section 3.2.3.2.1 and 3.2.3.2.2), ground elevation information was estimated using City-provided 5-foot contours. Invert elevations were established based on City-provided measure-down information, either available in the City's current GIS or collected by field staff upon request.

As part of the Plan and model, refinement to the cross-sections for open channel segments was requested by the City using available Light Detection and Ranging (LIDAR) information. LIDAR was used to refine the longitudinal slope of the open channel, but due to issues with the resolution of LIDAR cross sections, field visits were conducted to confirm the side slopes and bottom widths of the open channel segments.

3.2.3.2.4 Shape, Size, and Material

Pipe shape, size, and material assumptions from the 2004 Plan and model were maintained. For segments adjusted or added (see description in Sections 3.2.3.2.1 and 3.2.3.2.2), the information was either included based on the City's GIS or collected by the City staff upon request. Pipes of 15-inch diameter and greater were included in the model. Table 3-6 summarizes the Manning's roughness coefficient "n" assumed for each pipe material.

Table 3-6. Manning Roughness Coefficients

Material	Manning's n
Concrete pipe	0.014
Corrugated metal pipe	0.024
Plastic	0.011
Open channels	0.035
New pipe added for CIPs	0.013

Open channels were modeled as trapezoidal channels. Longitudinal slopes were refined based on LIDAR information, and cross-section information refined based on field inspections of the channels.

3.2.3.2.5 Segment Length

The length of each pipe or open channel segment was maintained from the 2004 Plan and model. For segments added or adjusted, the pipe length was taken from the City's GIS. Some pipe lengths were extended or combined with other segments to ensure continuity in the system.

3.3 Drainage Standards

The City's Public Works Standards, Section 2: Stormwater, was referenced for general design criteria related to stormwater infrastructure. Such information includes pipe size, detention and water quality facility sizing, Manning's roughness coefficient "n," cover, and structure placement and spacing.

Applicable design criteria are listed below in Table 3-7 and used for the design of CIPs (see Section 6).

Table 3-7. Drainage Standards and Design Criteria	
Criteria	Value
Water quality facility design	Shall meet requirements of the current City of Portland Stormwater Management Manual
Pipe size	Minimum 12-inches in diameter (for public main lines)
Manning's roughness	0.013
Conveyance design storm	Minimum 100-year
Manhole spacing	Maximum 400 feet
Minimum pipe cover	30 inches

The current Public Works Standards reference a 100-year design storm for conveyance system piping. The level of protection used in the 2004 Plan, as well as for the previous 1997 Plan, is based on the following:

- Storm sewer pipes draining less than 640 acres: 25-year, 24-hour design storm
- Storm sewer pipes draining greater than 640 acres: 50-year, 24-hour design storm
- Open channels draining less than 250 acres: 25-year, 24-hour design storm
- Open channels draining greater than 250 acres: 50-year, 24-hour design storm
- Open channels draining greater than 640 acres: 100-year, 24-hour design storm

Due to the size of the subbasins, the 2004 Plan used the 25-year, 24-hour design storm. For consistency with the previous master plans, the system evaluation and CIP design is based on the 25-year, 24-hour storm event.

3.4 Flood Control Model Results

XP-SWMM v2012 was used to simulate the water quality, 2-year, 5-year, 10-year, 25-year, and 100-year design storms for the current and future development conditions.

Results of the hydrologic and hydraulic simulations are tabulated in Appendix A (Table A-1 for hydrologic results and Table A-2 for hydraulic results). For reporting purposes, the hydrologic results reflect all simulated design storms, and the hydraulic results tables reflect just the 10-year and 25-year flows used to identify capacity deficiencies and size CIPs.

The hydrologic results table (Table A-1) is sorted by system outfall and includes subbasin name, modeled inlet node ID, subbasin area, pervious curve number, impervious area, and associated design flow. The hydraulic results table (Table A-2) is also sorted by system outfall and includes conduit name, upstream and downstream node ID, length, size, invert and ground elevations, and 10-year and 25-year peak flow and water surface elevation.

Due to the use of the SCS CN method and the low impervious percentage and CN assumed for select subbasins under the existing development condition, some subbasins have no reported flow during the water quality, 2-year, and 5-year design storm. Based on the limited runoff producing area, the small design storm depth, and the CN assumptions, runoff generated from impervious surfaces in the model would be stored in void space present in the pervious area.[1]

[1] "Urban Hydrology for Small Watersheds", Technical Release 55 from the United States Department of Agriculture, Soil Conservation Service, Engineering Department. Dated June 1986, Table 2-1.

3.4.1 Initial Identification of Flooding Problems

Flooding problems are identified where flow exits the system by overtopping manholes and entering road surfaces. Surcharging is considered acceptable as long as flow does not enter the roadway. For open channel segments, flooding was identified by water overtopping the banks.

As shown in Table A-2, a total of 27 modeled conduits totaling 17,000 feet in length were predicted to flood during either the existing or future development scenarios. For purposes of reporting results and facilitating discussion with City staff, conduits were geographically grouped into “flooding problem areas.” Figure 3-1 shows the modeled flooding locations under the existing development condition and Figure 3-2 shows the project flooding locations under the future development condition. Both figures are located at the end of this section.

A meeting was held with City staff on October 25, 2012, to review the initial XP-SWMM model results. City staff provided comment and discussion about each identified, modeled flooding area. Additional flooding areas that are not reflected in modeled results were also identified by City staff and included due to the frequency of complaints received. Based on City feedback and, in some cases, field reconnaissance, a recommendation to include a CIP for the flooding area was made.

Table 3-8 summarizes the identified flooding problem area by system number (outfall number). The flooding frequency and scenario is identified and the source of the capacity deficiency is provided. The CIP recommendation is also provided.

Table 3-8. Initial Flood Control CIP Opportunity Areas

System number by outfall	Conduit name[a]	Flooding frequency and scenario	Source of capacity deficiency	City feedback	CIP recommended? (Y/N)	CIP description
1	JCD80a	Future 25-year	Existing 18" pipe (JCD80a) is relatively flat and results in predicted flooding.	• Overflow discharges to an existing wetland (no anticipated property damage). • An existing siphon (not modeled) is present to regulate flow. • Flooding in this area reflected in 2004 MP (CIP-9).	N	N/A
4	JCB10c and JCB10d	Future 10-year and 25-year	Existing 18" pipe (JCB10c) and elliptical 24" x 12" (JCB10d) are under capacity and results in predicted flooding.	• Recent redevelopment activities have occurred onsite. • Flooding in this area reflected in 2004 MP (CIP-15).	Y	Pipe upsize
5	Multiple (see Meek Street CIP)	Existing 10-year and 25-year Future 10-year and 25-year	Modeled flooding throughout the Meek Street, Monroe Street and 32nd Avenue area (see CIP-2 and CIP-10 from the 2004 MP).	• A portion of original CIP constructed along Meek Street installed with incorrect elevations. Current manhole plug prevents flows from entering newly installed pipe. • New CIP design/cost estimate to reflect continuation of the conveyance to Roswell Detention Pond. • Harrison Street was just repaved (not ideal to redisturb).	Y	Detention facilities and pipe upsize
6	KC20c, KC10b, and KC30a	Existing 10-year and 25-year Future 10-year and 25-year	• Existing 21" pipe (KC10a) and 18" pipes (KC10b and KC30c) are under capacity and results in predicted flooding. • Replacement of KC10a eliminates flooding on KC20c.	Flooding in this area reflected in 2004 MP (CIP-8)	Y	Pipe upsize
7	WRA30e	Existing 10-year and 25-year Future 10-year and 25-year	WRA30e is composed of multiple pipe segments. A constriction (15" pipe) is located (node 11003-15009) along the segment and results in predicted flooding along the segment.	• Downstream open channel adjacent to railroad tracks. Limited offsite flooding potential. • Per field survey, no constriction present. • Flooding in this area reflected in 2004 MP (CIP-14).	N	N/A
12	MSB20d and MSB20e	Future 25-year	MSB20d is negatively sloped and causing backwater conditions and predicted flooding along MSB20d and MSB 20e.	• City confirmed negative slope. • Minor flooding < 2 cfs requires a CIP.	Y	Pipe replacement/ upsize
12	MSB30c and MSB30d	Future 25-year	MSB30c is negatively sloped and causing backwater conditions and predicted flooding along MSB30c and MSB30d.	• City confirmed that no negative slope exists. • Minor flooding < 1 cfs does not require CIP.	N	N/A
13	UICs 34155 and 34137	Reported by City staff	Two existing UICs (UIC 34155 and 34137) are not operational. Attempts to retrofit these UICs by City staff have been ineffective.	• Two additional UICs (34167 and 34138) may also be decommissioned due to their location along Lloyd Avenue. • Decommissioning these UICs was proposed in the 2004 Master Plan (CIP-3).	Y	UIC decommissioning and pipe installation

Table 3-8. Initial Flood Control CIP Opportunity Areas

System number by outfall	Conduit name[a]	Flooding frequency and scenario	Source of capacity deficiency	City feedback	CIP recommended? (Y/N)	CIP description
13	MSA80c and MSA70d	Existing 10-year and 25-year Future 10-year and 25-year	MSA80c is negatively sloped and causing backwater conditions and predicted flooding along MSA80c and MSA70d.	• Pipe goes through Linwood Elementary School (possible construction issues). • School recently installed a rain garden onsite that may mitigate flow. • Flooding in this area reflected in 2004 MP (CIP-3 and CIP-13).	Y	Detention facility and/or pipe upsize
13	MSA20a	Existing 25-year Future 10-year and 25-year	MSA20a is under capacity, resulting in predicted flooding and modeled with no pipe cover.	• City confirmed limited pipe cover. • Flooding in this area reflected in 2004 MP (CIP-3).	Y	Pipe relocation and/or pipe upsize
14	No Piped System in Location	Reported by city staff	Localized flooding reported by City maintenance staff at Plum Avenue and Apple Street.	A CIP to address flooding in this area was proposed in the 2004 Master Plan (CIP-4).	Y	Pipe installation
14	MSA40, MSA30a, and MSA50a	Future 25-year	MSA40 is under capacity, resulting in predicted flooding on MSA40, MSA30a, and MSA50a.	City reviewed the model outfall configuration and provided a revised configuration based on a field visit. When the revised outfall configuration was added to the model, no flooding occurred.	N	N/A
15	MSA100f, MSA100e, MSA100d, and MSA100c	Existing 10-year and 25-year Future 10-year and 25-year	Pipe segments are under capacity, resulting in predicted flooding at each segment.	• No anticipated schedule for annexation or development of upstream area. • Existing Furnberg Detention Facility may mitigate additional flows. • Flooding in this area reflected in 2004 MP (CIP-11).	Y	Pipe relocation and/or pipe upsize
Unmodeled	UIC 34076	Reported by city staff	Localized flooding reported by City maintenance staff at 44th and Llewellyn.	• Flooding is likely the result of too large contributing drainage area to the single UIC. • A CIP to address flooding in this area was proposed in the 2004 Master Plan (CIP-6).	Y	Installation of UICs
Unmodeled	UIC 24014	Reported by city staff	Localized flooding reported by City maintenance staff at 36th Avenue between King and Harvey Streets.	• Existing grade results and lack of nearby piped drainage system results in runoff pooling during rain events. • Vacant parcel and available ROW adjacent to UIC.	Y	Installation of vegetated infiltration facility to reduce runoff volume to UIC
Unmodeled	UIC 34094 and 34110	Reported by city staff	Localized flooding reported by City maintenance staff at 55th Avenue between King Street and Monroe Street.	An adjacent house currently sits below street grade and experiences flooding.	Y	Installation of soakage trench to reduce runoff volume to UIC

[a]*The conduit name is shown on Figures 3-1 and 3-2.*

3.4.2 Flood Control CIP Locations

Review of initial model results and coordination with City staff resulted in the identification of 12 flooding problem areas requiring CIP development (Table 3-8 above):

1. System 4: Conduit JCB10c and JCB10d
2. System 5: Multiple conduits associated with the Meek Street system
3. System 6: Conduit KC20c, KC10b, and KC30a
4. System 12: MSB20d and MSB20e
5. System 13: UICs on Lloyd Avenue (34155, 34137, 34167, and 34138)
6. System 13: Conduit MSA80c and MSA70d
7. System 13: Conduit MSA20a
8. System 14: Pipe extension down Apple Avenue
9. System 15: Conduit MSA100f, MSA100e, MSA100d, and MSA100c
10. Unmodeled Area: UIC 34076 at 44th and Llewellyn
11. Unmodeled Area: UIC 24014 on 36th Avenue between King and Harvey Streets
12. Unmodeled Area: UIC 34094 and 34110 on 55th Avenue between King and Monroe Streets

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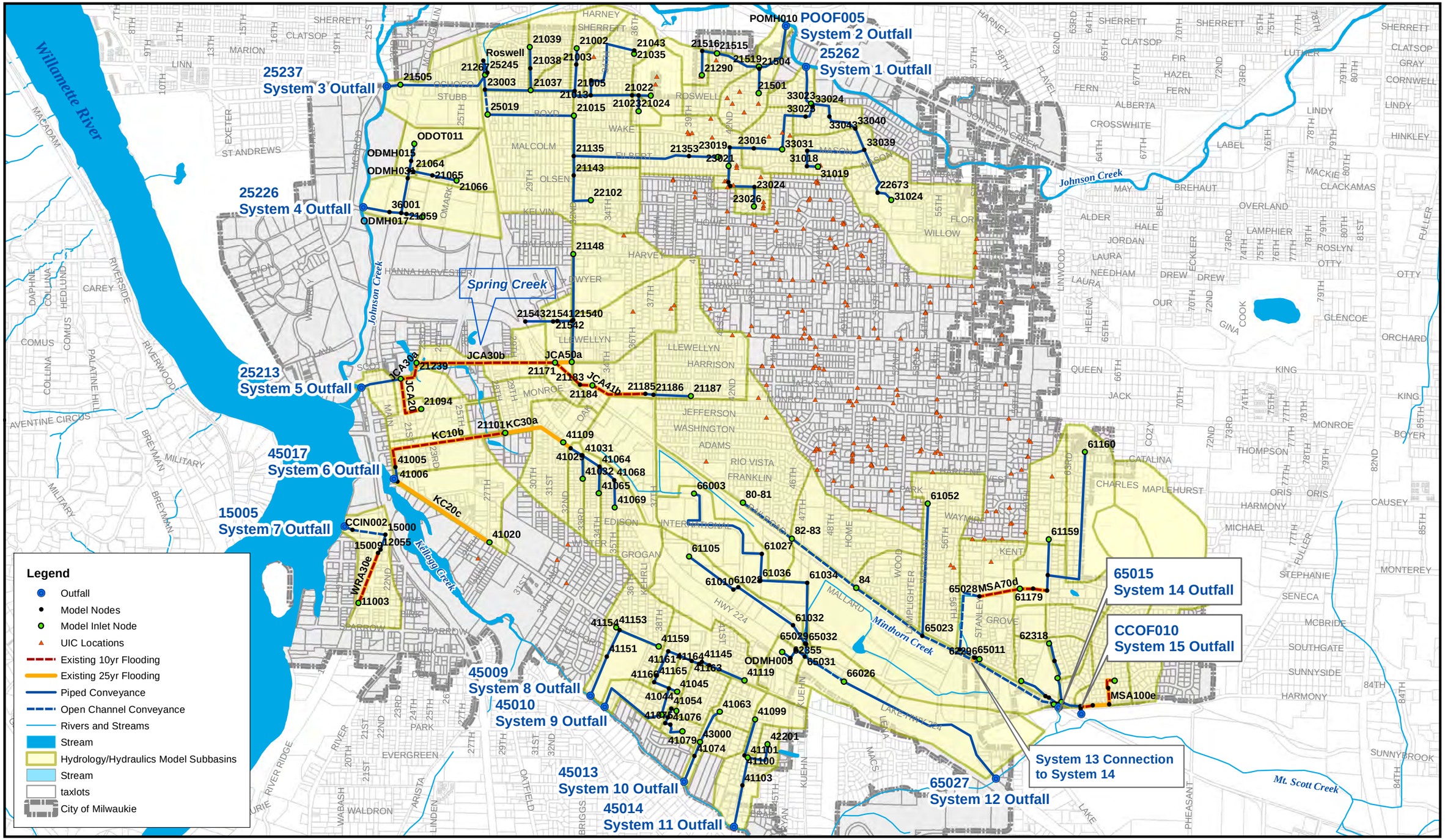


Brown AND Caldwell

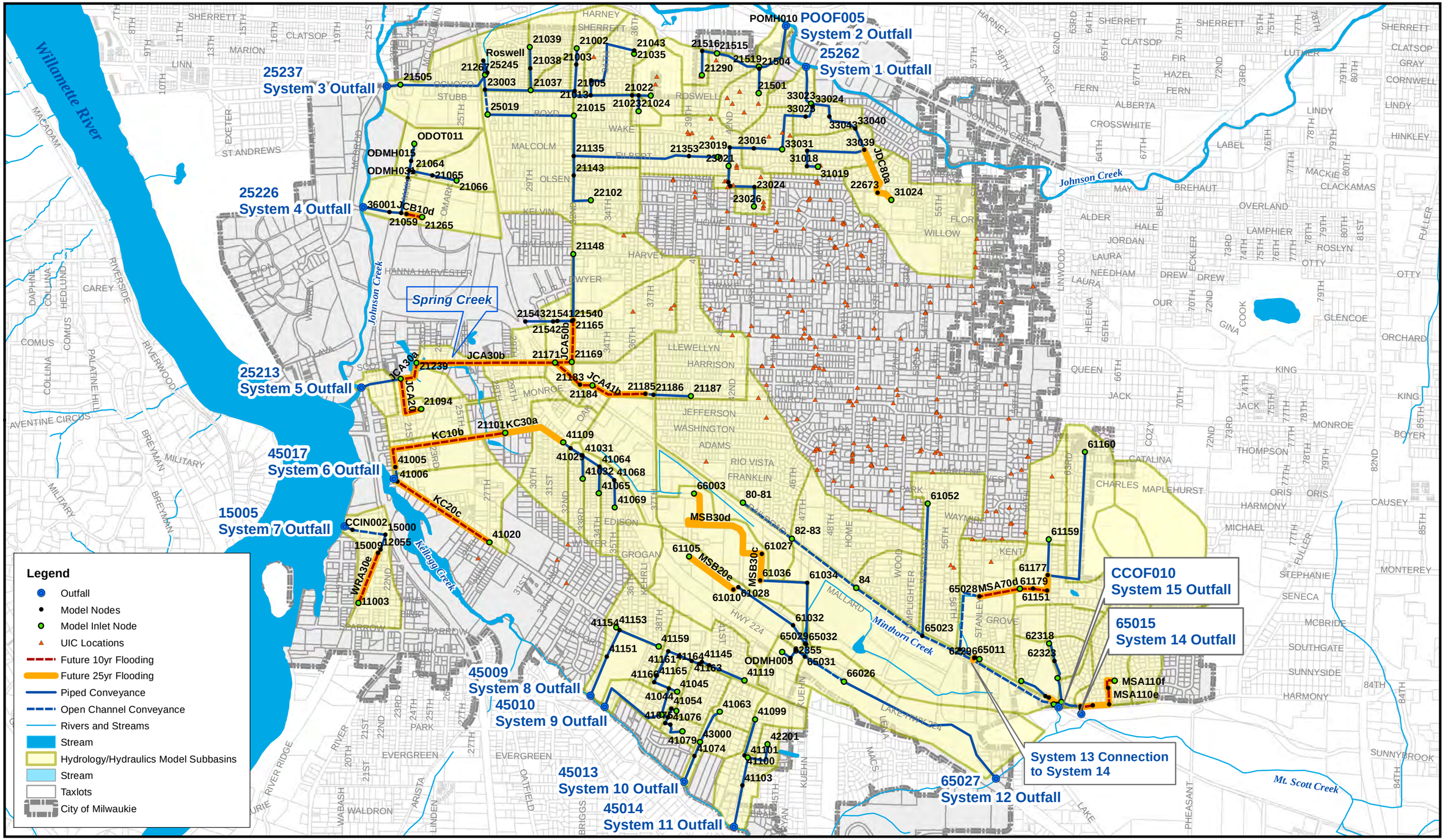
March 19th, 2013

0 1,500 3,000 Feet

N

CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE

EXISTING FLOODING
FIGURE 3-1



Brown AND Caldwell

March 19th, 2013

0 1,500 3,000 Feet

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CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE
FUTURE FLOODING
FIGURE 3-2

Section 4

UIC Risk Evaluation

In conjunction with the draft UIC WPCF permit template, issued by DEQ in July 2012, the City is required to conduct a system-wide assessment of its UICs and retrofit/decommission UICs determined not to be in compliance with conditions of the permit. In anticipation of these requirements, the City conducted a preliminary UIC system-wide assessment and an unsaturated Groundwater Protectiveness Demonstration (GWPD) as part of this Stormwater Master Plan update. Results are used to identify UICs that would potentially require retrofit or decommissioning due to inadequate vertical separation distance from the bottom of the UIC to groundwater.

This section provides results of the preliminary UIC system-wide assessment and describes results of the unsaturated GWPD. A detailed technical report describing the overall UIC risk evaluation is provided in Appendix B.

4.1 Preliminary System-wide Assessment

A preliminary, system-wide assessment was conducted to inventory the physical characteristics of the City's UICs. Per Schedule B in the July 2012 UIC WPCF draft permit template, a system-wide assessment must include the following:

1. An inventory of all UICs that receive stormwater or other fluids and their locations by latitude and longitude in decimal degrees
2. An estimate of vehicle trips per day for the area(s) drained by the UICs
3. An inventory of all UICs that discharge directly to groundwater
4. An inventory of all UICs within 500 feet of any water well and/or within the 2-year time-of-travel of a public water well
5. An inventory of all UICs that are prohibited by OAR 340-044-0015(2)
6. An inventory of all industrial and commercial properties with activities that have the potential to discharge to UICs that the City owns or operates

The City developed a summary of its UIC system in 2005 as a part of the City's UIC Stormwater Management Plan (HDR, 2005). This summary was used to conduct the preliminary system-wide assessment. For UICs identified as discharging directly to groundwater (item 3 above) or located within defined setback areas from water wells (item 4 above), the City is required to analyze potential impacts to groundwater.

4.1.1 Results

At this time, two UICs (UIC IDs 24027 and 44003) were identified that directly discharge to groundwater. Thirty-three UICs were identified that did not meet the required setback distance from water wells. Additionally, one UIC (UIC ID 24008) has minimal (< 1 foot) vertical separation distance to groundwater.

These 36 UICs (total) are identified as "at-risk" for purposes of this UIC risk evaluation. These "at-risk" UICs are shown in Appendix B, Figures 3 and 5. Designation as an "at-risk" UIC means that potential action by the City may be required, but UICs determined to be "at-risk" are not in direct violation of draft permit conditions.

4.1.2 Additional Data Needs

Based on current information, the system-wide assessment is not complete and additional "at-risk" UICs may be identified. Prior to submittal of a final system-wide assessment to DEQ, required with issuance of the City's UIC WPCF permit, the following information will need to be included/verified:

1. A complete water well location inventory and identification of UICs within those additional well setbacks.
2. Verification of the depth to groundwater for UICs with unknown depth per the City's 2005 UIC summary. Currently, a total of 32 UICs per the City's 2005 UIC summary have unknown depth.

4.2 GWPD Application

For those "at-risk" UICs located within a water well setback, one option to address the potential for groundwater contamination and address requirements of the draft UIC WPCF template is to conduct a protectiveness demonstration in order to show that the UICs do not impair groundwater quality or supply. To do this, a model is typically used to simulate the attenuation of stormwater pollutants in the subsurface.

An unsaturated zone GWPD model was developed for the City to simulate the vertical transport of pollutants in saturated soils. Results from the unsaturated zone GWPD include a minimum protective vertical separate distance to attenuate typical stormwater pollutants. Per the analysis, a minimum separation distance of 1 foot is recommended. Development of this unsaturated zone GWPD addresses the City's draft permit requirements related to those "at-risk" UICs within a water well setback.

4.3 UIC Risk Evaluation Results

Results from the preliminary system-wide assessment (Section 4.1) and GWPD (Section 4.2) were used to assess those identified "at-risk" UICs and determine whether retrofit or decommissioning would be required.

For the 33 UICs identified within a water well setback, results of the unsaturated zone GWPD indicate that a minimum of 1-foot vertical separation is required for groundwater protectiveness and pollutant attenuation. Of the 33 UICs designated as "at-risk" because of their setback distance to water wells, all 33 UICs appear to have greater than 1 foot of vertical separation and therefore, no retrofit or decommissioning of these UICs is necessary.

The draft UIC WPCF permit template does not prohibit UICs with limited vertical separation distance to groundwater. UICs with limited vertical separation distance to groundwater are problematic only if they are within a water well setback. The preliminary system-wide assessment (Section 4.1) identified three UICs with 1 foot or less vertical separation distance to groundwater. These UICs are not located within an identified water well setback, but the City's water well inventory is incomplete at this time. Therefore, these three UICs are still considered to be "at-risk."

Results of the UIC risk evaluation were discussed with the City at a meeting on October 25, 2012. Two of the three "at-risk" UICs (UIC IDs 24008 and 24027) are located within the Master Plan study area, and decommissioning of these UICs in conjunction with a water quality improvement CIP was requested. The other "at-risk" UIC (UIC ID 44003) is located outside of the study area. Although the water well inventory is incomplete, the location of this UIC would not likely be within a water well setback area. Therefore, retrofit or decommission of the UIC at this time was not proposed.

Table 4-1 summarizes the status of "at-risk" UICs considered for decommissioning in conjunction with a flood control or water quality CIP.

Table 4-1. UIC Decommissioning CIP Locations

System number by outfall	UIC ID	Rationale for decommissioning	City feedback	CIP recommended? (Y/N)	CIP description
1	UIC 24008	Limited (< 1 foot) vertical separation distance to groundwater and incomplete well inventory at this time	• Periodic flooding identified in proximity of UICs • Drainage area to UIC 24008 overlaps with drainage area to UIC 24027	Y	• Decommission. • Due to UIC locations in close proximity, combine drainage areas into single water quality facility.
1	UIC 24027	No vertical separation distance to groundwater and incomplete well inventory at this time	• Periodic flooding identified in proximity of UICs • Drainage area to UIC 24008 overlaps with drainage area to UIC 24027	Y	
Unmodeled	44003	No vertical separation distance to groundwater and incomplete well inventory at this time	• Limited potential for identification of water wells in location • Area is outside Master Plan study area	N	N/A

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Section 5

Water Quality Retrofit Assessment

As part of this Plan and stormwater CIP development, an assessment and identification of water quality retrofits for inclusion in the CIP was conducted. Review and identification of water quality retrofits, including the definition of specific water quality retrofit projects and a timeline for implementation, are specific requirements of the City's reissued NPDES MS4 permit. Specific NPDES MS4 permit requirements (Schedule A.6.b) of the water quality retrofit assessment are listed below:

i. *Stormwater retrofit strategy statement and summary, including objectives and rationale*

ii. *Summary of current stormwater retrofit control measures being implemented, and current estimate of annual program resources directed to stormwater retrofits*

iii. *Identification of developed areas or land uses impacting water quality that are high-priority retrofit areas*

iv. *Consideration of new stormwater control measures*

v. *Preferred retrofit structural control measures, including rationale*

vi. *A retrofit control measure project or approach priority list, including rationale, identification, and map of potential stormwater retrofit locations where appropriate, and an estimated timeline and cost for implementation of each project and approach*

This section describes the objectives, methodology, final project identification (i.e., water quality retrofit list), and applicability to the City's NPDES MS4 permit requirement.

Water quality retrofit projects identified herein have been carried forward and coordinated with flood control CIP locations (identified in Section 3.4) and UIC decommissioning CIP locations (identified in Section 4.3) to develop a comprehensive project list to address stormwater quality and quantity management and NPDES MS4 permit compliance in the city (Section 6).

5.1 Objectives

The City's water quality retrofit strategy is to target high pollutant generating areas where existing stormwater treatment is currently limited, in order to make progress toward achieving TMDL pollutant load reduction and improve overall surface water quality conditions. Efforts will be focused on the use of infiltration-based facilities (e.g., vegetated infiltration basins, rain gardens, planters) to provide runoff volume reduction in addition to conventional treatment.

To the extent possible, water quality retrofit opportunity areas were identified in conjunction with existing system capacity deficiencies (Section 3) and UIC decommissioning needs (Section 4) to allow for the projects to address multiple objectives.

5.2 Methodology

Water quality opportunity areas were initially identified through a review of information from the City's GIS system including aerial photos, the location of existing water quality facilities, existing vacant areas, publically owned lands, existing and future condition land uses, storm system layout, topography, and locations where flood control or UIC decommissioning is required.

The City's stormwater collection and conveyance system discharges through 15 stormwater outfalls to Johnson Creek, Kellogg Creek, Mt. Scott Creek, and the Willamette River. Each of the 15 drainage systems was individually reviewed. The following steps were conducted to identify the initial opportunity areas for water quality retrofits.

Step 1 **Identify vacant lands**. Review of vacant lands was conducted to identify parcels where space may be available for siting of a new regional or local water quality facility. Publically owned vacant lands were prioritized. Vacant lands observed (based on aerial photographs) to be forested or riparian area were not considered to be a priority area, as such areas should be preserved.

Step 2 **Review land use.** High pollutant generating land uses (e.g., industrial, commercial) with high imperviousness values were prioritized for installation of a stormwater treatment facility.

Step 3 **Review existing water quality facilities.** Public water quality facilities within the city of Milwaukie include five regional detention ponds and multiple rain garden facilities installed as part of green street applications (Figure 2-5).

Regional detention ponds currently provide limited water quality benefits, as they were installed for flood control purposes only. Retrofit of these facilities may provide additional water quality benefit while treating a large contributing drainage area.

City-owned green street facilities treat area within the ROW only, as the City requires private development to treat and detain all runoff on site. These facilities are becoming more common in the city, but are limited in the size of the contributing drainage areas that would be addressed.

Existing detention pond facilities that have little water quality benefit were prioritized as water quality retrofit opportunities. Additionally, area not already treated by an existing water quality facility (e.g., green street) was prioritized for water quality retrofit. For purposes of TMDL pollutant load reduction estimates, more benefit is obtained by increasing the coverage of water quality facilities instead of applying multiple water quality facilities treating overlapping drainage areas.

Step 4 **Review proposed flood control/UIC decommissioning project needs**. The City of Milwaukie is coordinating its water quality retrofit assessment with the development of its updated Stormwater Master Plan. To the extent that a CIP can address multiple objectives, such CIP would be prioritized (see Section 7). Coordination is particularly beneficial for those flood control/pipe replacement projects isolated to the ROW, as new green street facilities (as currently used by the City) may be installed at the same time, resulting in schedule and cost efficiencies.

5.3 Water Quality Retrofit Assessment Results

This section presents the results of the water quality retrofit assessment, including a preliminary identification of water quality opportunity areas and selection of nine water quality retrofit opportunities requiring CIP development.

5.3.1 Initial Identification of Water Quality Opportunity Areas

In conjunction with the methodology described in Section 5.2, an initial water quality retrofit opportunity list was developed and reviewed with City staff at a workshop on October 25, 2012. During the workshop, project feasibility and practicability was discussed. Additional water quality opportunity areas identified by City staff were also discussed. Based on City feedback and, in some cases, field reconnaissance, a recommendation to include a CIP for the water quality opportunity area was made.

Table 5-1 summarizes the initially identified water quality opportunity area (by outfall number), the associated project descriptions, and feedback from City staff regarding feasibility. The CIP recommendation is also provided.

Table 5-1. Initial Water Quality CIP Opportunity Areas

System number by outfall	Project name	Proposed project description	Project rationale	Coordination with identified flood control or UIC decommissioning projects?	City feedback	CIP recommended? (Y/N)
1	Willow Detention Pond Retrofit	Retrofit existing detention pond for water quality enhancement	• Pond collects a relatively large, untreated residential area. • Project may be coordinated with a flood control CIP.	Flood control: predicted flooding in segment JCD80a on Regents Drive	• Observed flooding is not due to a system capacity deficiency. No flood control CIP proposed for the area. • Pond access via easement through private property. Site visit confirms private fence may be barrier to access.	Y
1	Stanley-Willow UIC Decommis-sioning	Enhance existing Ball-Mitchell stormwater facility (in park)	• Existing facility provides little/no water quality benefit. • Facility may be used to collect and treat runoff associated with decommissioning the "at-risk" UICs (see Section 4)	UIC Decommissioning	• Current facility provides no flow control benefit and little water quality benefit (operates as a bioswale conveyance). • Area discharges downstream to Willow Detention Pond.	Y
3	Ochoco Detention Pond Retrofit	Retrofit existing detention pond for water quality enhancement	• Existing private pond functions as flood control only. • Pond collects high pollutant generating area (industrial land use) and discharges to Johnson Creek (existing TMDL).	No	Located on private property with limited adjacent space availability (developed industrial parcel).	N
3	Main Street Detention Pond Retrofit	Retrofit existing detention pond for water quality enhancement	• Existing public pond functions as flood control only. • Pond collects high pollutant generating area (industrial land use) and discharges to Johnson Creek (existing TMDL).	No	Surrounding vacant lands are privately held and this retrofit would require an upsize of the facility.	N
5	Monroe Street Green Street	Install rain gardens in the ROW along Monroe Street as part of the strategy to address capacity deficiencies at Meek Street	High pollutant load generating area (commercial/industrial land use).	Flood control: Meek Street flood control project	• Monroe Street recently paved. Not in City's best interest to dig up a recently improved street. • Consider use of detention ponds instead to help mitigate flows for the Meek Street project.	N
5	Meek Street Detention Facilities	Construct detention/water quality facility (ies) on publically owned, vacant parcels adjacent to the Meek Street flood control project	Facility may be used to minimize pipe upsize requirements associated with the Meek Street flood control project.	Flood control: Meek Street flood control project	Detention facility opportunity areas include public, vacant parcels at SE Campbell between 32nd and 34th Avenue and at Balfour in order to mitigate flows to the Roswell Detention Pond.	Y

Table 5-1. Initial Water Quality CIP Opportunity Areas

System number by outfall	Project name	Proposed project description	Project rationale	Coordination with identified flood control or UIC decommissioning projects?	City feedback	CIP recommended? (Y/N)
6	Washington Street Green Streets	Install rain gardens in the ROW along Washington Street as part of the strategy to address capacity deficiencies	High pollutant load generating area (commercial/industrial land use).	Flood control: predicted flooding along Washington Street in segments KC10b and KC30a	2004 MP identified the use of a 112 cartridge StormFilter. Green street application is preferred.	Y
12	Wister Way Retention Facility	Utilize existing, privately owned vacant parcel to install water quality and detention facility and minimize need for system capacity upgrades.	High pollutant load generating area (commercial/industrial land use).	Flood control: predicted flooding along International Way in segments MSB20d and MSB20e	• Site located adjacent to Highway 224. Expensive property acquisition. • Site grading would be difficult and limited space availability.	N
13	Railroad Avenue channel restoration	Restore existing channel	Channel has significant sediment deposition and non-native vegetation, limiting its capacity.	No	Channel is located adjacent to railroad ballast, which may present difficulties in conducting maintenance.	Y
13	UIC Decommis-sioning on Lloyd Avenue	Install a rain garden or bioswale to treat runoff associated with decommissioning of non operational UICs on Lloyd Avenue	Facility may be used to collect and treat runoff associated with decommissioning UICs identified as a maintenance concern (see Section 3)	UIC Decommissioning	Potential project locations include the City-owned parcel containing the drinking water reservoir at Harlow Avenue and Stanley or the ROW adjacent to the Linwood Elementary School entrance off Stanley Avenue.	Y
15	Furnberg Avenue Retention Facility Retrofit	Retrofit existing public pond to serve as a regional stormwater facility	• Large area currently outside the City limits would result in significant increase in flow if annexed into the City. • Project may be coordinated with a flood control CIP.	Flood control: predicted flooding along Hemlock Street at segment MSA100f, MSA100e, MSA100d, and MSA100c	• No anticipated schedule for annexation or development of upstream area. • Existing Furnberg Detention Facility may already mitigate potential flows.	N
Unmodeled	UIC 34076	Install additional UICs to alleviate localized flooding reported	Flooding is likely the result of too large contributing drainage area to the single UIC.	Flood control: reported flooding by City maintenance staff at 44th and Llewellyn	A CIP to address flooding in this area was proposed in the 2004 Master Plan (CIP-6).	Y
Unmodeled	UIC 24014	Install vegetated infiltration facility to reduce runoff volume to UIC	Existing grade and lack of nearby piped drainage system results in runoff pooling during rain events.	Flood control: reported flooding by City maintenance staff at 36th Avenue between King and Harvey Streets.	Vacant parcel and available ROW adjacent to UIC.	Y
Unmodeled	UIC 34094 and 34110	Install of soakage trench to reduce runoff volume to UIC	Existing grade and lack of nearby piped drainage system results in runoff pooling during rain events.	Flood control: reported flooding by City maintenance staff at 55th Avenue between King Street and Monroe Street.	An adjacent house currently sits below street grade and experiences flooding	Y

5.3.2 Water Quality CIP Locations

Review of initial water quality retrofit CIP opportunity areas with City staff resulted in the identification of the following nine water quality retrofit opportunities requiring CIP development (see Table 5-1 above):

1. Willow Detention Pond Retrofit
2. Stanley-Willow UIC Decommissioning
3. Meek Street Detention Facilities
4. Washington Street Green Streets
5. Railroad Avenue Channel Restoration
6. UIC Decommissioning on Lloyd Avenue
7. Unmodeled Area: UIC 34076 at 44th and Llewellyn
8. Unmodeled Area: UIC 24014 on 36th Avenue between King and Harvey Streets
9. Unmodeled Area: UIC 34094 and 34110 on 55th Avenue between King and Monroe Streets

The final water quality retrofit project list is contained in Section 6 (Table 6-1), as identified by those projects designated as a water quality project and retrofit project for the NPDES permit compliance.

Section 6

Capital Improvement Projects

This section identifies the flood control and water quality CIPs designed to address flooding (Section 3), UICs identified for decommissioning (Section 4), and water quality retrofit opportunities (Section 5). To the extent possible, CIPs were developed as integrated solutions to address multiple objectives (e.g., flood control, water quality, etc.).

6.1 Integrated CIP Development

Integrated CIP development refers to the selection and design of CIPs to address multiple objectives including flood control, regulatory requirements, and water quality improvements.

An integrated CIP development approach was used during the identification of the water quality retrofit CIP opportunity areas (as described in Section 5). Areas where flood control or UIC decommissioning was needed were prioritized for purposes of targeting a water quality retrofit CIP opportunity area.

As described in Section 3.4.2, a total of 12 flood control CIP locations were identified. As described in Section 4.3, two UICs requiring decommissioning were identified. As described in Section 5.3.2, a total of nine water quality CIP locations were identified. These flood control, UIC decommissioning, and water quality CIP locations were consolidated to reflect consistent contributing areas. CIP design concepts and approaches described in Sections 3, 4, and 5 were revisited during CIP integration to develop a formalized CIP design for each opportunity area.

A comprehensive summary of identified flood control, water quality, and UIC decommissioning CIPs is provided in Table 6-1. A total of 17 CIPs are identified. Consolidation of flood control, UIC decommissioning, and water quality retrofit CIP opportunity areas (where applicable) results in a single, multi-objective CIP. Table 6-1 includes a problem description and project description for each CIP. CIPs are sorted and named by system (outfall) number. Projects not affiliated with a specific system number are named as general (G) G1, G2, and G3.

Table 6-1 indicates whether the CIP addresses flood control, water quality, or UIC decommissioning, and specifies whether the CIP would qualify as a water quality retrofit for NPDES MS4 permit compliance.

Figure 6-1 at the end of this section shows the location of each CIP. Detailed CIP fact sheets are provided in Appendix C and include additional design detail, cost information, and a map locating the specific system improvements.

6.2 CIP Sizing and Design Assumptions

This section includes a summary of the CIP sizing and design criteria based on the type of system improvement proposed. System improvements include pipe upsizing and pipe replacement, vegetation and infiltration enhancement of existing detention ponds, installation of new detention facilities, installation of rain gardens or stormwater planters, and installation of UICs. Proposed CIPs may reflect a combination of system improvements.

Revised hydraulic results tables reflecting inclusion of system improvements for flow control (e.g., pipe replacement and detention facility installation) are included in Appendix D (Table D-1). Pipe conduits associated with a CIP are designated with a “C” prefix in Table D-1.

6.2.1 Pipe Installation

Pipe installation is required for 15 of the 17 CIPs. New and replaced pipes are sized to eliminate modeled system flooding for the peak (25-year) design storm event under future development conditions.

Design criteria outlined in the City's Public Works Standards: Section 2 for conventional (pipe, manhole) stormwater infrastructure were used for CIP design (see Section 3.3). Pipe improvements were evaluated using XP-SWMM to ensure that installation of the CIP (i.e., relief of the constriction) did not result in downstream flooding.

6.2.2 Detention Ponds

Two new detention ponds, associated with CIP 5-1, are proposed to mitigate flow to the downstream conveyance system. One of the detention ponds, located at SE Campbell, is sized solely to mitigate flow to the existing pipe system along Meek Street, allowing the existing pipe to be used as part of the CIP. The other detention pond, at Balfour, is sized to mitigate flow to the downstream system, which drains to System 3. The City's sizing criteria for detention ponds was not specifically adhered to, given the space and configuration limitations associated with application of the two ponds. Design of the new detention ponds includes installation of amended soil for improved infiltration for the Balfour facility and landscape plantings for both facilities to enhance treatment capabilities.

Two detention pond retrofits are proposed for water quality improvement: CIPs 1-1 and 1-2. CIP 1-1 includes installation of 18 inches of amended soil, 18 inches of drain rock, and water quality facility plantings along the pond bottom. The City of Portland's 2008 Stormwater Management Manual (2008 SWMM) (standard detail SW-140 for a water quality retention pond) was referenced for design criteria. CIP 1-2 includes enhancement of an existing detention feature to receive additional flow associated with UIC decommissioning. The existing detention feature is not a designed detention pond (intended to store and discharge flow at a set rate), but functions more as a drainage swale. Improvements to the facility are limited to water quality facility plantings along the facility bottom.

6.2.3 Rain Gardens and Planters

Rain gardens and planters were sized based on the City of Portland's simplified method, as documented in the 2008 SWMM, using a 6 percent sizing factor on the contributing impervious area. 2008 SWMM standard details SW-312 and SW-140 were referenced for applicable design criteria.

6.2.4 Underground Injection Controls

UICs were sized based on the 2008 SWMM, Exhibit 2-31.

6.3 Unit Cost Estimates for CIP Development

Unit cost information for construction elements of the CIP facilities was compiled from recent, local, planning and design projects for the City of Portland (2010), City of Eugene (2007), and Clean Water Services (2012). Specific material costs for pipes and structures were confirmed in the RS Means Construction Cost Data (2012).

Preliminary CIP cost estimates are based on the unit cost information for construction elements plus a 30 percent contingency. Engineering and permitting and construction administration costs are based on a general percentage of the total construction cost. Land acquisition and easement costs are not included in the estimates, as most projects proposed are located on City property or within the City ROW. Unit cost information and individual cost estimates for CIPs are included in Appendix E.

Table 6-1. Project Summary

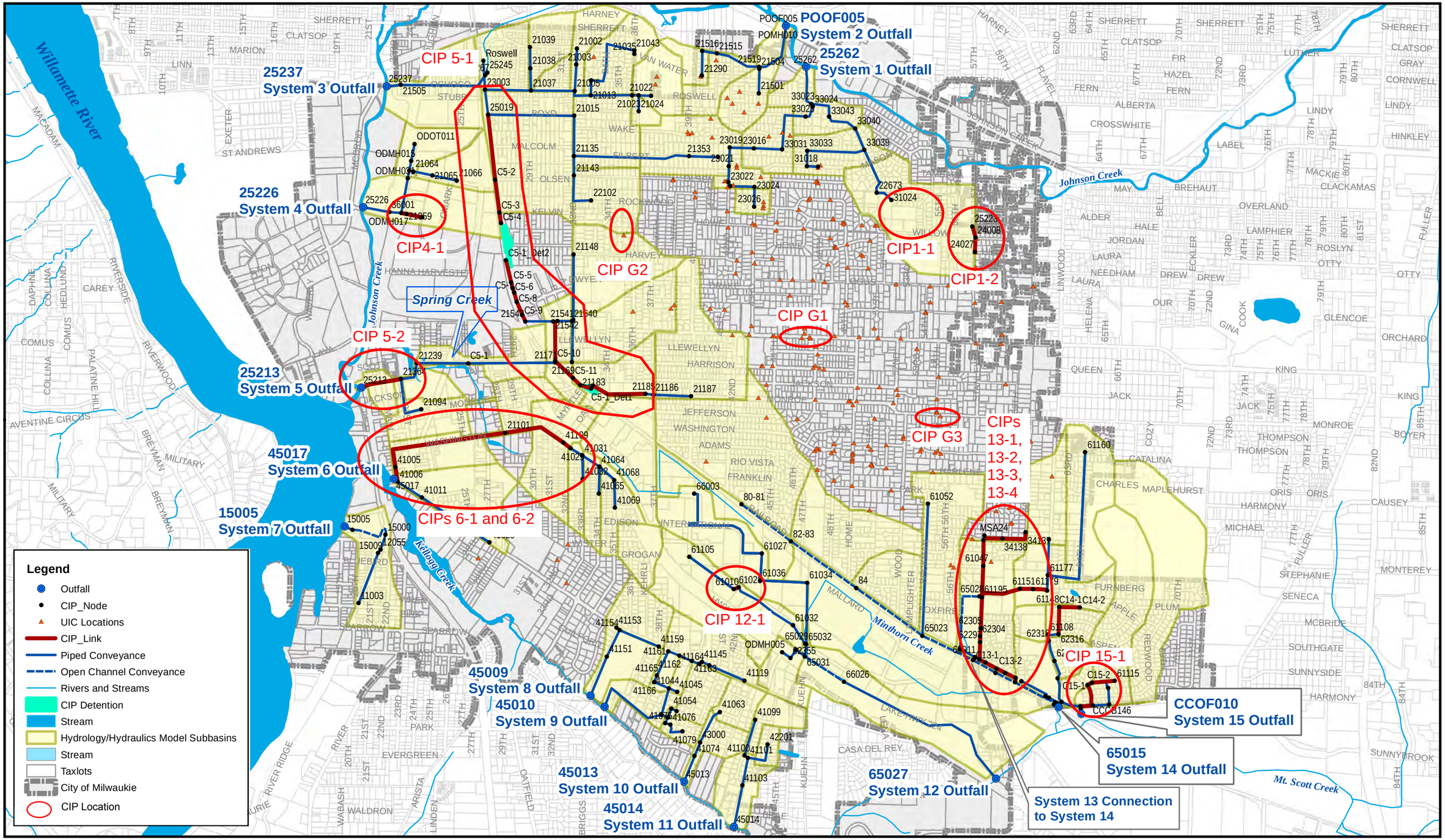
CIP No.	CIP type	CIP name	Proposed CIP location	Event(s) deficiency occurs	WQ retrofit for NPDES permit	Problem description	CIP description	Length of pipe installation, ft	Associated subbasins	Contributing drainage area, acres	Capital implementation cost total,$
System 1											
1-1	WQ	Willow Detention Pond Retrofit	55th Avenue, south of Firwood Avenue	Fut 25-yr	X	The existing Willow Detention Pond is located at the end of 55th Avenue, south of Firwood Avenue. The pond appears to drain approximately 15 acres of residential area in subbasin JCD80. As-built information on the pond inlet and outlet structure was not available at the time of this study; however, it is assumed that the pond was designed for flood control and was not constructed with water quality features.	Enhance treatment capability of existing pond through vegetation enhancement and promoting infiltration. Predicted flooding is not expected due to the pipe configuration and receiving wetland downstream of the facility. The CIP was not designed to address the model predicted flooding. No asbuilt information for Willow Pond currently available. May consider future upsizing of existing Willow Detention Pond to address larger contributing drainage area associated with subbasins JCD90 and JCD91 (from UIC # 24008 and #24027) (see CIP 1-2), but not included as part of this project.	0	JCD80, JCD90, JCD91	64.8	68,600
1-2	WQ, UIC	Stanley-Willow UIC Decommissioning	Stanley Avenue and Ball-Mitchell Park		X	Upstream UICs 24008 and 24027 have limited vertical separation distance and were identified as “at-risk” per the City's GWPD.	Route drainage area from UIC 24008 and 24027 to existing Ball-Mitchell stormwater facility. Add vegetation to bottom of pond to enhance treatment capability of through filtration.	425	JCD90, JCD91	3.9	100,200
System 4											
4-1	FC	Main Street at Milport Road	East of McLoughlin Blvd at Milport Road	Fut 10-yr, Fut 25-yr		The 12" x 24" elliptical CMP associated with modeled conduit JCB10d (21265-21059) and the 18" concrete pipe associated with modeled conduit JCB10c (21059-ODMH017) are under capacity, causing predicted flooding along JCB10d between SE Main and SE Omark and in the parking lot between an industrial building and SE Main Street.	This CIP includes replacement of JCB10d and JCB10c from MH21265 to MHODMH017 with 380 feet of 30" concrete pipe using the same upstream and downstream invert elevations. Replacement of model conduits JCB10d and JCB10c (defined by the upstream node to downstream node number) includes replacement of seven manholes.	380	JCB10	35.2	241,200
System 5											
5-1	FC, WQ	Meek Street	Monroe Street to Meek Street along Railroad	Exst 10-yr, Exst 25-yr, Fut 10-yr, Fut 25-yr	X	The majority of System 5 is predicted to flood. CIP-2 in the 2004 Master Plan recommended routing a bypass for flow from Monroe Street, east of SE 32nd Ave to an ODOT system to the north of Meek Street. This CIP was partially constructed on Meek Street, but not connected to the storm drain system.	The Meek Street pipe system was constructed in 2005 with inadequate slope to maintain the existing concept per CIP-2 from the 2004 MP. This CIP includes replacement the existing pipe system down Monroe from 37th Avenue to 32nd Avenue. A detention facility at SE Campbell between 32nd Avenue and 34th Avenue is designed to mitigate peak flow north to the Meek Street pipe system. Installation of new pipe from Harrison to Meek along Murphy is required. New pipe will also be installed to parallel existing railroad tracks from Meek to Balfour. Installation of a new manhole west of 32nd Avenue to separate Harrison Street system; installation of a new manhole at Meek and 32nd Avenue to separate 32nd Avenue system north of Meek (to new Meek Street pipe) and south of Meek (to new pipe parallel to railroad) is required. Vegetated area at Balfour will be utilized for water quality, flow control, and infiltration. A 36" pipe was designed to connect flow to the Roswell Detention Facility.	5,171	JCA60, JCA52, JCS51, JCA50, JCA41, JCA40, JCA30	188.2	3,088,200
5-2	FC	Harrison Street Outfall	Harrison Street from outfall to 21st Ave	Exst 10-yr, Exst 25-yr, Fut 10-yr, Fut 25-yr		CIP 5-2 addresses the majority of the flooding along Harrison Street following construction of CIP 5-1. Following installation of CIP 5-1 in the model, flooding is still predicted on 21st Street along modeled conduit JCA20 (21094_21364) and on Harrison Street along modeled conduits JCA30a (21239_21364) and JCA30b (CIP5_1_21239). In conjunction with light rail expansion, the existing 18" down Harrison will be replaced with a 24" pipe from 23rd to 26th Avenue (not reflected in the cost of this CIP).	This CIP includes replacement of 696 feet of existing 24" concrete pipe with 696 feet of 36" along JCA10, from MH21364 to the outfall at Johnson Creek, which extends 40 feet from MH25213.	696	JCA40, JCA30, JCA20, JCA10	60.8	619,400

Table 6-1. Project Summary

CIP No.	CIP type	CIP name	Proposed CIP location	Event(s) deficiency occurs	WQ retrofit for NPDES permit	Problem description	CIP description	Length of pipe installation, ft	Associated subbasins	Contributing drainage area, acres	Capital implementation cost total,$
System 6											
6-1	FC	Washington Street	Washington Street from 28th Ave to Kellogg Lake	Exst 10-yr, Exst 25-yr, Fut 10-yr, Fut 25-yr		The 21" pipe KC10a on Main Street near Kellogg Lake and the 18" pipes KC10b and KC30a along Washington Street are under capacity, which is causing predicted flooding along Washington Street between Main Street and Hwy 224.	This CIP includes replacement of 239 feet of existing 21" concrete pipe with 30" pipe along KC10a from MH41005 to 41006. This CIP also includes replacement of 3,312 feet of existing 18" concrete pipe with 24" concrete pipe along KC10b from MH41109 to MH41005 and KC30a from MH41029 to 41109.	3551	KC10, KC30, KC40, KC50, KC60	130.9	1,804,100
6-2	WQ	Washington Green Streets	Washington Street from 23rd Ave to Oak St	NA	X	The contributing area from Washington Street is a high pollutant load generating area. Currently, the TriMet Light Rail Project is installing green street features to provide water quality treatment from Main Street to 23rd Avenue along Washington Street.	This CIP includes an extension of the green street features being installed by TriMet, from 23rd to Oak along Washington Street. The installation of CIP 6-1 will involve pipe replacement and repaving a portion of Washington Street, which provides an opportunity to complete green street features while the pipe replacement construction is occurring.	NA	KC30, KC40, KC50, KC60	62.6	511,300
System 12											
12-1	FC	International Way and Wister Street	International Way and Wister Street	Fut 25-yr		The 24" MSB20d at International Way is negatively sloped and MSB20e and MSB20d are under capacity, resulting in predicted flooding along MSB20e.	Replace 80 feet of existing 24" pipe with a 48" pipe along MSB20d from MH61010 to MH61028.	80	MSB20, MSB21	64.6	90,000
System 13											
13-1	UIC, WQ, FC	UIC decommissioning on Lloyd	4 UICs along Lloyd Avenue and Stanley Avenue from Lloyd Avenue to Railroad Avenue	NA	X	UIC 34155 (west of Stanley Avenue) and UIC 34137 (intersection of 60th Avenue and Lloyd Avenue) are not operational, as reported by City maintenance staff. The City has attempted to retrofit these UICs; however, the UICs are still not functioning properly and flooding has been reported at the intersection of Lloyd Avenue and Stanley Avenue. UICs 34167 and 34138 are also included in this CIP due to their location along Lloyd Avenue.	This CIP includes decommissioning of four UICs and installation of 787 feet of new 12"HDPE pipe along Lloyd Avenue from 60th Avenue wet of Stanley Avenue. Along Stanley Avenue from Lloyd Avenue to Railroad Avenue, this CIP also includes replacement of existing concrete pipe with 1,314 feet of new 12"HDPE pipe and 499 feet of 18"HDPE pipe. To address water quality of new contributing area previously captured by UICs, this CIP includes installation of a rain garden. The preliminary (for purposes of the CIP cost estimate) is the ROW adjacent to the Linwood Elementary School entrance off Stanley Avenue. As an alternative, the City-owned parcel containing the drinking water reservoir at Harlow Avenue and Stanley may be considered.	2895	MSA22, MSA23, MSA24, MSA25, MSA26, MSA27	49.0	793,700
13-2	FC	Linwood Avenue	At Linwood Elementary School between Linwood Avenue and Stanley Avenue	Exst 10-yr, Exst 25-yr, Fut 10-yr, Fut 25-yr	Possible	The 15" concrete pipe associated with modeled conduit MSA80b (61148_61179) and the 18" concrete pipes associated with modeled conduits MSA80a (61179_61151) and MSA70d (61151_65028) are under capacity. Flooding is predicted along this reach, which is located between Linwood Avenue and Stanley Ave on the Linwood Elementary School grounds. Capacity limitations are caused by undersized piping along MSA80b, MSA80a and MSA70d.	This CIP includes conducting a planning level study to initially evaluate options for flood mitigation. Pipe surcharge currently discharges to existing raingarden, ball fields, and open channel area. A planning study would to consider cost benefit options for partial pipe reconstruction and day lighting to channel for water quality and flood control, full pipe replacement, and grant funding opportunities for school district to expand existing onsite raingardens. The CIP cost estimate assumes full pipe replacement. Replace 683 feet of existing 18" pipe with 30" pipe along MSA70d. Replace 186 feet of existing 18" pipe with 24" pipe along MSA80a. Replace 243 feet of existing 15" pipe with 24" pipe along MSA80b.	1112	MSA90, MSA80, MSA70	85.2	469,700
13-3	FC	Railroad Avenue at Stanley	Railroad Avenue, near Stanley Avenue	Exst 25-yr, Fut 10-yr, Fut 25-yr		The 18" culvert associated with modeled conduit MSA20a (66023_65033) is under capacity, causing predicted flooding along MSA20a over Railroad Avenue. Flooding was also observed during a storm event on November 19 and 20, 2012.	This CIP includes abandoning the existing culvert under Stanley Avenue at Railroad Avenue. Flow from the channel on the west side of Stanley is routed through two new 60 feet parallel reinforced concrete culverts (18" diameter) under Railroad Avenue on the west side of Stanley in the same location as the existing 18" culvert. Flow from Stanley as described in CIP 13-1 is routed through a new 660 feet of 18" HDPE pipeline on the north side of Railroad Avenue from a new manhole at 62296 to a new manhole at C13-4. Intermediate manholes are placed to accept flows from Maple Street, Ash Street, and Grove Street. At new MHC13-4, flow is routed through a new 60 feet of reinforced concrete culvert (18" diameter), where this CIP outfalls to the Railroad Avenue channel.	840	MSA22, MSA23, MSA24, MSA25, MSA26, MSA27, MSA31, MSA70, MSA71, MSA72, MSA80, MSA90	134.2	357,300
13-4	WQ, Maint	Railroad Avenue Channel	Existing conveyance ditch along Railroad Avenue	NA	X	The existing channel along the north side of Railroad Avenue receives drainage from a large portion of the City. Limited maintenance appears to be conducted, which is limiting the ability of the channel to convey stormwater and provide water quality benefit.	This CIP includes targeted maintenance activities including hand removal of non-native vegetation, sediment removal, and replanting activities. Maintenance activities to focus on approximately 2,000 linear feet of channel between Wood Avenue and Grove Avenue.	2000	MSA250, MSA230, MSA220, MSA215, MSA210	200.7	52,900

Table 6-1. Project Summary

CIP No.	CIP type	CIP name	Proposed CIP location	Event(s) deficiency occurs	WQ retrofit for NPDES permit	Problem description	CIP description	Length of pipe installation, ft	Associated subbasins	Contributing drainage area, acres	Capital implementation cost total,$
System 14											
14-1	FC	Plum and Apple Street	Apple Street near Plum Drive and extending to Juniper Street near Aspen Street	NA		Localized flooding is reported by City maintenance staff.	This CIP includes installation of 780 feet of new 12" HDPE pipe from the intersection of Plum and Apple Street to Juniper and Aspen Street	780	MSA61	9.6	180,100
System 15											
15-1	FC	Hemlock Street to Harmony Road	Intersection of Hemlock Street and Sequoia Avenue, then along an easement to Harmony Road	Exst 10-yr, Exst 25-yr, Fut 10-yr, Fut 25-yr		The 15" pipe segments associated with model conduits MSA100f (61115_61118), MSA100e (61118_CCCB154), and the 18" pipe segments associated with model conduits MSA100d (CCCB154_CCCB146), MSA100c (CCCB146_CCCB159), and MSA100b (CCCB159_CCCB161) are under capacity, causing predicted flooding from Hemlock Street, through private property to Harmony Way.	This CIP includes replacement and realignment of this pipeline, which is currently located in backyards from Hemlock Street to Harmony Way. When constructed, this pipeline will replace a portion of the pipeline along Cedarcrest Drive, from Hemlock Street to Harmony Way. The diameter and elevation of this pipe is currently unknown, and should be identified in the design stage. Design assumptions assume area outside UGB is brought in and no flow control provided (would change need for 30" pipe).	1036	MSA100, MSA110	116	560,600
Other											
G1	FC, UIC	47th and Llewellyn	UIC at intersection of Llewellyn and 47th Avenue	NA		The City reports flooding at the intersection of 47th and Llewellyn, near UIC 34076.	Due to the existing grade and lack of a nearby piped drainage system, this CIP includes the installation of additional UICs with associated inlets and inlet lead lines to alleviate flooding at 47th and Llewellyn.	150	NA	8	155,600
G2	WQ, FC, UIC	36th near King	UIC on 36th Ave around Dwyer Street	NA	X	The City reports flooding between King Road and Harvey Street, at UIC 24014. This UIC is located at a low point in elevation along 36th Avenue, between Harvey and King.	Due to the existing grade and lack of a nearby piped drainage system, this CIP includes installation of a raingarden or other stormwater feature to minimize flow into the UIC and provide water quality treatment of contributing impervious area within the ROW.	NA	NA	3.5	104,600
G3	FC, UIC	Flooding on 55th Ave between King Street and Monroe Street	Street flooding along 55th Avenue	NA	X	The city reports flooding at the intersection along 55th Avenue, possibly due to a non functioning UICs. House currently sits below grade, which is the source of the complaints. No curbed streets in area and flat grade.	Utilize available, ROW area to install a soakage trench with perforated pipe to minimize flow into UIC.	125	NA	2.5	23,000



Brown AND Caldwell

March 19th, 2013

0 1,500 3,000 Feet

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CITY OF MILWAUKIE
STORMWATER MASTER PLAN UPDATE
CIP LOCATIONS
FIGURE 6-1

Section 7

CIP Prioritization

This section summarizes the process that the City used to prioritize identified CIPs in order to schedule project funding.

7.1 Prioritization Criteria and Scoring

As described in Section 6, a total of 17 CIPs were developed to address flood control, UIC decommissioning needs, and water quality retrofit within the city of Milwaukie. To the extent possible, individual CIPs were developed to address multiple objectives (e.g., addressing flood control, regulatory compliance, water quality improvement, etc.).

During a CIP prioritization workshop December 21, 2012, City maintenance and engineering staff selected applicable criteria with which to evaluate the multi-objective CIPs (see Table 7-1). Identified criteria include historical/persistent problems, flooding/safety issues, regulatory compliance, ongoing maintenance, water quality improvement, project concurrence, and system sustainability. Identified criteria can overlap (e.g., water quality improvements would also address regulatory compliance). Such overlap created an indirect weighting of project scores based on the City's deemed importance of the overlapping issue.

Each project is scored on a scale of 1 to 3. In order to ensure consistency in how scores were selected, general conditions were defined for each score under each criterion. Table 7-1 summarizes the resulting prioritization criteria and scoring guidelines.

Table 7-1. Multi-Objective CIP Prioritization Criteria and Scoring

Criterion	Scoring definition		
	Score = 3	Score = 2	Score = 1
Historical problem/ persistent problem	Identified as a CIP in the 2004 Stormwater Master Plan		New CIP per the 2012 system evaluation
Flooding issue/safety concern	• Significant hazard or threat to public safety or property • Flooding currently observed	• Potential hazard or threat to public safety or property • Future flooding potential	No safety hazard addressed with CIP
WPCF/NPDES Permit requirements	Addresses NPDES Permit requirement related to (water quality) retrofits or addresses need to decommission at-risk UICs		Does not directly address WPCF/NPDES permit requirements
Ongoing maintenance need	• City staff frequently responds to citizen complaints in the area • Frequent onsite response/ maintenance required	• City staff occasionally responds to citizen complaints in the area • Onsite response/maintenance not always required	City staff does not maintain facility outside of typical maintenance cycle
Water quality improvement	Facility installation will directly reduce TMDL/303(d) pollutants to receiving water bodies	• Facility installation may improve water quality, but is not designed specifically for water quality improvement	CIP does not address water quality control

Table 7-1. Multi-Objective CIP Prioritization Criteria and Scoring			
Criterion	Scoring definition		
	Score = 3	Score = 2	Score = 1
Concurrence	Required pre-requisite or preliminary project for other prioritized CIPs	CIP construction may occur in conjunction with other CIP construction efforts (wastewater, roadway)	CIP construction scheduling would not impact or be impacted by other stormwater or infrastructure projects
Sustainability	CIP would provide long-term benefits (aesthetics, livability, etc.)		CIP would address immediate need but may not enhance or improve over the long term

City maintenance staff and City engineering staff independently evaluated each CIP and scored based on criteria identified in Table 7-1. Raw scores from both maintenance and engineering staff are provided in Table 7-2. Project scores were relatively consistent between departments for most criteria. Score variability is primarily observed for the water quality improvement and sustainability criteria. Maintenance staff and engineering staff scores were added for all criteria to result in an overall CIP score.

Table 7-2. Raw CIP Scoring[a]

CIP number	CIP name	Overall score	Criteria													
			Historical problem/ persistent problem		Flooding issue/ safety concern		WPCF/ NPDES permit requirements		Ongoing maintenance need		Water quality improvement		Concurrence		Sustainability	
			EGR	MNT	EGR	MNT	EGR	MNT	EGR	MNT	EGR	MNT	EGR	MNT	EGR	MNT
1-1	Willow Detention Pond Retrofit	23	1	1	1	1	3	3	1	1	3	2	1	1	3	1
1-2	Stanley-Willow UIC Decommissioning	21	1	1	1	1	3	3	1	1	1	2	1	1	3	1
4-1	Main Street at Milport Road	17	3	1	2	1	1	1	1	1	1	1	1	1	1	1
5-1	Meek Street	31	3	3	3	3	3	1	2	3	3	1	2	1	2	1
5-2	Harrison Street Outfall	30	2	3	3	3	1	3	2	2	1	2	3	2	2	1
6-1	Washington Street	21	3	3	2	1	1	1	1	1	1	2	1	2	1	1
6-2	Washington Green Streets	27	1	1	1	1	3	3	1	1	3	3	1	2	3	3
12-1	International Way and Wister	15	1	1	2	1	1	1	1	1	1	1	1	1	1	1
13-1	UIC Decommissioning on Lloyd	36	3	3	3	3	3	3	3	3	2	2	1	2	2	3
13-2	Linwood Elementary	25	3	2	2	2	2	2	1	1	1	2	1	3	2	1
13-3	Railroad Avenue at Stanley	29	3	2	3	3	1	1	3	2	1	1	3	3	2	1
13-4	Railroad Avenue	26	1	1	3	3	2	1	3	2	2	1	2	2	2	1

Table 7-2. Raw CIP Scoring[a]

CIP number	CIP name	Overall score	Criteria													
			Historical problem/ persistent problem		Flooding issue/ safety concern		WPCF/ NPDES permit requirements		Ongoing maintenance need		Water quality improvement		Concurrence		Sustainability	
			EGR	MNT	EGR	MNT	EGR	MNT	EGR	MNT	EGR	MNT	EGR	MNT	EGR	MNT
	Channel															
14-1	Apple Storm Improvements	28	3	3	3	3	1	1	3	3	1	2	1	1	2	1
15-1	Hemlock Street	18	1	1	2	3	1	1	1	1	1	2	1	1	1	1
G1	47th and Llewellyn	23	1	1	3	3	1	1	3	3	1	1	1	1	2	1
G2	36th near King Avenue	25	1	1	3	3	2	1	3	3	2	1	1	1	2	1
G3	55th near Monroe Avenue	25	1	1	3	3	2	1	3	3	2	1	1	1	2	1

[a]*Scoring under the EGR was completed by City engineering staff; scoring under the MNT columns was completed by City maintenance staff.*

7.2 Project Prioritization and Final CIP Priority Ranking

Based on the project scoring (Table 7-2 above), CIPs were scored and ranked. Initial ranking results identified that a majority of the more expensive, longer-duration projects received the highest scores whereas some lower-cost, shorter-duration projects received lower scores. This does not accurately reflect the City's objective and overall project priority. Additionally, some projects that should be scheduled or conducted concurrently had variable scores such that if project scheduling was established directly on the raw scores, the projects would not be constructed at the same time.

City staff reviewed the initial ranking and adjusted it as follows:

1. CIP 13-1 (UIC Decommissioning on Lloyd) is currently scheduled, per the City's existing CIP, to be constructed in 2013/2014. CIP 13-1 is directly upstream of CIP 13-3 and 13-4. Due to project constructability and cost implications, CIP 13-3 and 13-4 rankings were adjusted to reflect construction of all three CIPs at the same time.
2. CIPs G1, G2, and G3 are relatively low-cost projects that were identified by maintenance staff due to the frequency that unscheduled maintenance required in those project locations. Although the projects would not alleviate a widespread problem or address a large contributing drainage area, these projects are considered "low-hanging fruit" that could alleviate maintenance requirements for the City and be more easily scheduled and implemented due to their cost.
3. CIP 6-2 (Washington Street Green Streets) was initially scored and ranked as a higher-priority project. Construction of this project would be most cost-effective if scheduled with the Washington Street pipe replacement project (CIP 6-1), a high-cost and lower-scoring project. Therefore, the ranking of CIP 6-2 was adjusted to reflect construction concurrently with CIP 6-1.

The final CIP priority ranking is provided in Table 7-3. For comparison, the project rank by score is also listed. High-priority projects and associated project costs were used in the development and analysis of the stormwater utility fee (see Section 8.2).

Table 7-3. CIP Priority Ranking

Priority ranking	Ranking by score	CIP no.	CIP name	Overall score	Estimated cost, $	Combined score (by criteria)						
						Historical problem/ persistent problem	Flooding issue/ safety concern	WPCF/NPDES permit requirements	Ongoing maintenance need	Water quality improvement	Con-currence	Sustain-ability
1	1	13-1	UIC Decommissioning on Lloyd	36	793,700	6	6	6	6	4	3	5
2	4	13-3	Railroad Avenue at Stanley[a]	29	357,300	5	6	2	5	2	6	6
3	7	13-4	Railroad Avenue Channel[a]	26	52,900	2	6	3	5	3	4	3
4	2	5-1	Meek Street	31	3,088,200	6	6	4	5	4	3	3
5	3	5-2	Harrison Street Outfall	30	619,400	5	6	4	4	3	5	3
6	5	14-1	Apple Storm Improvements	28	180,100	6	6	2	6	3	2	3
7	8	G2	36th near King Avenue	25	104,600	2	6	3	6	3	2	3
8	8	G3	55th near Monroe Avenue	25	23,000	2	6	3	6	3	2	3
8	8	13-2	Linwood Elementary	25	469,700	5	4	4	2	3	4	3
10	11	1-1	Willow Detention Pond Retrofit	23	68,600	2	2	6	2	5	2	4
10	11	G1	47th and Llewellyn	23	155,600	2	6	2	6	2	2	3
			High-priority project cost:		5,913,100							
12	13	1-2	Stanley-Willow UIC Decommissioning	21	100,200	2	2	6	2	3	2	4
12	13	6-1	Washington Street	21	1,804,100	6	3	2	2	3	3	2
12	6	6-2	Washington Green Streets[b]	27	511,300	2	2	6	2	6	3	6
15	15	15-1	Hemlock Street	18	560,600	2	5	2	2	3	2	2
16	16	4-1	Main Street at Milport Road	17	241,200	4	3	4	2	3	2	2
17	17	12-1	International Way and Wister	15	90,000	2	3	2	2	2	2	2
			Total project cost:		9,220,500							

[a]*Due to project concurrence issues and project cost savings, these CIPs are recommended for construction in conjunction with CIP 13-1.*

[b]*Due to concurrence with anticipated construction of CIP 6-1, this project was prioritized in accordance with the priority schedule for CIP 6-1.*

Section 8

CIP Implementation

Staffing resources and current stormwater utility funding were assessed to determine whether adjustments to staffing and/or funding levels are needed in order to implement the Plan and associated CIPs. Staffing needs, proposed capital expenditures, and ongoing operational costs were considered in the evaluation of the stormwater utility fee and system development charges (Section 8.2).

8.1 Staffing Analysis

Stormwater staffing levels were evaluated to determine staffing implications associated with new regulatory requirements (i.e., the City's reissued NPDES MS4 permit and pending UIC WPCF permit) and proposed CIPs developed under this Plan.

8.1.1 Background

A total of 5.25 full-time employees (FTE) are currently funded out of the stormwater utility. Staff is responsible for overall stormwater system maintenance and select regulatory compliance activities including illicit discharge investigations, stormwater monitoring, and maintenance activity tracking. Maintenance staff includes 0.5 FTE stormwater supervisor, 4.0 FTE utility workers, and a 0.5 FTE utility specialist. An additional 0.25 FTE is allocated for summer/part-time help.

Engineering staff are currently funded out of the general fund although their time is partially spent on stormwater work. Regulatory support and CIP engineering activities (e.g., project management, design support) in support of this Plan will also be required of engineering staff; therefore, engineering staff was also included in the staffing analysis.

8.1.2 Assumptions

As part of the Plan development, interviews were conducted with maintenance and engineering staff related to their individual job responsibilities, time sheet accounting, overall time management, and observed issues and limitations implementing their assignments. Such information was used to verify which activities to include in the staffing analysis and how such activities are implemented (maintenance or engineering).

The City of Milwaukie uses the Hanson system to track stormwater assets and also log maintenance staff hours. An annual report (from March 2011 to March 2012) was provided from the City. This information was used in conjunction with the City's 2011–12 NPDES MS4 annual report, which documents the amount of maintenance (e.g., miles of road swept, number of catch basins cleaned, etc.) conducted. Both sources were used to developed approximate maintenance staff time estimates for various activities.

Detailed CIP cost estimates (Appendix E) include estimates for engineering/permitting activities and construction administration activities required for implementation of the CIP. For each CIP, City engineering staff is expected to require 100 percent of the construction administration budget and, depending on the CIP, a portion of the engineering/permitting budget if surveying or design services are expected to be done in-house.

Table 8-1 summarizes the maintenance and engineering cost assumptions used for the staffing analysis.

Table 8-1. Maintenance and Engineering Time Summary		
Activity	Staff resource	Average time calculation
Erosion control plan review	Maintenance	4 hours per application
Infrastructure inspection/maintenance	Maintenance	• 1 hour per sediment manhole • 0.5 hour per manhole • 1.5 hour per UIC or drywell • 20 feet per hour for culvert or ditch maintenance • 181 feet per hour for culvert or ditch inspections • 60 feet per hour for pipe cleaning
Stormwater facility inspections	Maintenance	4 hours per facility for inspections
Rain garden maintenance	Maintenance	50 ft_2 per hour
Development plan review	Engineering	20 hours per application

8.1.3 Analysis

Appendix F contains the staffing summary tables and results of the staffing analysis for maintenance (Table F-1) and engineering (Table F-2).

The staffing analysis assumes that existing City staff is able to implement the current stormwater program (pre-2012 conditions). Additional activities not previously conducted by the City under current staffing were used to create the estimates of additional staff resource needs. Additional activities include those associated with the reissued NPDES MS4 permit (in 2012), the pending UIC WPCF permit (in 2013), and implementation of the proposed CIPs (from 2013–23).

Specific activities and time assumptions are listed in Tables F-1 and F-2 by program activity. Because the City's NPDES MS4 permit and the City's pending UIC WPCF permit are on a 5-year permit cycle, a 5-year staff projection is shown. Time spent on regulatory activities is estimated over that 5-year permit term. Generally, activities are conducted annually so use of a 5-year term does not factor into the estimate of additional staffing needs.

Implementation of the proposed CIP is projected over a 10-year period. For maintenance staff, all associated CIP maintenance activities are calculated as an annual average. For engineering staff, to allow for staffing needs to be assessed on an annual basis, the total cost of the engineering/permitting and construction administration services for each CIP was averaged over a 10-year period. Because project duration varies and project scheduling is not finalized, this allowed for engineering staff needs to be estimated on an annual basis. The total cost was converted to an FTE assuming a cost of $100,000 per FTE. Averaging the engineering staff CIP cost over a 10-year period is a conservative estimate. Construction schedules will shift necessary staff resources across the 10-year CIP period and use of an average staff time estimate may be too low or too high in some years.

8.1.4 Results

Based on the staffing analysis, it is estimated that over the next 5 years, between 1.4 and 2.1 additional FTE will be required for maintenance staff and approximately 0.7 additional FTE will be required for engineering staff. These estimates are based on available documentation from the City, documented assumptions, and assumes completion of the proposed CIP over the 10-year planning period.

8.2 Utility Rate Study

In conjunction with development of the Plan, a review of the City's current stormwater utility fee and SDCs was conducted. A detailed technical memorandum describing the rate evaluation is provided in Appendix G.

The existing fee structures for the City were adopted in 2004. As of March 2013, the City's current stormwater utility fee is$11.44 per effective stormwater unit (ESU) and the current SDC is$1,184 per ESU.

8.2.1 Level of Service Estimates

Using CIP cost information (Section 6), results of the staffing analysis (Section 8.1) and estimated operating expenditures, four LOS categories were developed to establish funding schemes over the 10-year CIP program. Description of the LOS categories is provided in Table 8-4. LOS considered staffing, capital projects, maintenance, regulatory compliance, proactive system replacement, and vehicle replacement. Current LOS assumes no increase in staffing, capital projects, or deviation from existing program implementation. The proactive LOS assumes completion of all proposed CIPs within the 10-year planning period and proactive system replacement activities.

Table 8-4. Funding Analysis Level of Service

Level	Staffing	Capital projects	Maintenance	TMDL/NPDES	System replacement	Vehicle replacement
Current	• Meet historical programmatic needs. • No additional staff.	Implement CIPs 13-1 and 5-1.	Maintain conventional system components	Meet historical permit needs.	System replacement when failure occurs.	• Replace existing vactor truck with dedicated funds. • Continue allocating$50,000/yr for vehicle replacement (assumes 12-year replacement cycle).
Minimum	• Meet programmatic needs per newly issued permits. • Address CIPs 13-1, 13-3, 13-4, and 5-1.	Implement CIPs 13-1, 13-3, 13-4 and 5-1.	Maintain conventional and vegetated system components (e.g., rain gardens)	• Meet new permit requirements related to system evaluation and monitoring. • Conduct water quality retrofits in accordance with permit requirements.	System replacement when failure occurs.	• Replace existing vactor truck with dedicated funds. • Continue allocating$50,000/yr for vehicle replacement (assumes 12-year replacement cycle).
Recommended	• Meet new programmatic needs per newly issued permits. • Address higher-priority CIPs.	Construct higher-priority CIPs over a 10-year planning horizon. Construct all CIPs in the future.	Maintain conventional and vegetated system components (e.g., rain gardens)	• Meet new permit requirements related to system evaluation and monitoring. • Conduct water quality retrofits in accordance with permit requirements.	• Replace 50% of the system over a 75-year period. • Assume$390,000/yr for replacement activities starting in FY 2017/18.	• Replace existing vactor truck with dedicated funds. • Continue allocating$50,000/yr for vehicle replacement (assumes 12-year replacement cycle).

Table 8-4. Funding Analysis Level of Service						
Level	Staffing	Capital projects	Maintenance	TMDL/NPDES	System replacement	Vehicle replacement
Proactive	• Meet new programmatic needs per newly issued permits • Address all CIPs.	Construct all CIPs over a 10-year planning horizon.	Maintain conventional and vegetated system components (e.g., rain gardens)	• Meet new permit requirements related to system evaluation and monitoring. • Conduct water quality retrofits in accordance with permit requirements.	• Replace 100% of the system over a 75-year period. • Assumes$780,000/yr for replacement activities starting in FY 2017/ 18.	• Replace existing vactor truck with dedicated funds. • Allocate$85,714/yr for vehicle replacement (assumes 7-year rotating cycle).

8.2.2 Rate Evaluation and Recommendation

Debt and cash funding scenarios were analyzed for each of the four LOS categories identified above. Results of the analysis are summarized in Table 8-5.

Table 8-5. Stormwater Utility Fee Evaluation (provided by FCS Group as part of the 2012 Plan development)										
Scenario	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Current, cash	$11.44	$11.94	$12.47	$13.02	$13.58	$14.16	$14.73	$14.73	$14.73	$14.73
Minimum, debt	$11.44	$11.89	$12.35	$12.83	$13.33	$13.85	$14.35	$14.85	$15.37	$15.91
Minimum, cash	$11.44	$12.32	$13.27	$14.29	$15.39	$16.58	$17.84	$17.84	$17.84	$17.84
Recommended, debt	$11.44	$12.39	$13.41	$14.50	$15.69	$16.98	$17.49	$18.00	$18.52	$19.06
Recommended, cash	$11.44	$12.61	$13.89	$15.31	$16.86	$18.56	$20.43	$22.50	$23.40	$24.31
Proactive, debt	$11.44	$12.82	$14.36	$16.09	$18.02	$20.18	$22.54	$25.18	$28.10	$31.36
Proactive, cash	$11.44	$13.05	$14.89	$16.99	$19.39	$22.10	$25.20	$28.73	$32.69	$36.19

Over the 10-year CIP planning period, stormwater utility rate increases ranged from$3.30 (for the current LOS and cash funding scenario) to$25.00 (for the proactive LOS and cash funding scenario). Changes to the calculation assessment methodologies resulted in a reduction in SDC from $1,184/ESU to $765/ESU.

A meeting was held with the Citizen Utility Advisory Board (CUAB) on March 6, 2013. Discussion of the various funding scenarios and modeling assumptions was held. The CUAB moved forward with the decision to propose the “recommended” LOS and the cash funding rate structure.

Underline/Strikeout Amendments

Comprehensive Plan

CHAPTER 3—ENVIRONMENTAL AND NATURAL RESOURCES

OPEN SPACES, SCENIC AREAS, AND NATURAL RESOURCES ELEMENT

OBJECTIVE #2—NATURAL RESOURCES

Policies

3. Maintain and improve water quality of wetlands and water bodies ~~through~~ by regulating the placement and design of stormwater drainage facilities.
6. Maintain and improve existing stormwater detention and treatment standards to ensure that the impact of ~~new~~ development does not degrade water quality and wildlife habitat.

AIR, WATER AND LAND RESOURCES QUALITY ELEMENT

Background and Planning Concepts

Water Quality

Sanitary sewers are provided in Milwaukie and are required for all new uses. There is an area along Johnson Creek and portions of the Wichita/Stanley area that began to connect to sanitary sewer in 2010. The lack of sanitary sewer service in the area prior to this time, and the properties in the area that continue to use private septic systems, ~~probably~~ may contribute to the water quality problems in Johnson Creek. Agricultural uses along Kellogg Creek and commercial uses and waterfowl usage along Minthorn Spring Creek may contribute to ~~low~~ water quality impairments in these water bodies.

CHAPTER 5—TRANSPORTATION, PUBLIC FACILITIES AND ENERGY CONSERVATION

PUBLIC FACILITIES AND SERVICES ELEMENT

Background and Planning Concepts

Drainage and Streets

The steady urbanization of the Milwaukie area has resulted in more and more of the land being covered by buildings and streets, creating a higher storm runoff and obstructing natural soil percolation processes. The result has been the prolonged ponding of water after storms and flooding of public streets and private yards. Street flooding causes erosion and damage to the pavement and presents a constant and expensive maintenance problem. Roadside ditches, now used to carry away excess runoff, present a traffic hazard and severely limit road improvements. Major street improvements throughout the Milwaukie area cannot proceed without adequate storm drainage facilities.

The City of Milwaukie ~~currently~~ has approximately ~~22~~ 50 miles of storm ~~drains~~ drainage and collection systems within the City. In addition, many ~~of the~~ areas are served by sumps or drywells and do not have an established storm collection and conveyance system. With 65 miles of road compared to the ~~22~~ 50 miles of storm drainage and collection systems, storm drainage continues to be a major issue within the City of Milwaukie.

In 1979, the City updated a drainage study identifying priority areas for storm drainage improvements. A master plan for storm drainage in the City was prepared. The plan acknowledged the impact of development to the east of Milwaukie on storm drainage capacity. Milwaukie is the terminus for several regional drainage basins - Johnson, Kellogg, Mt. Scott, and Phillips Creeks. Storm drainage is an area-wide concern requiring a local and regional planning process.

Subsequent updates to the storm drainage master plan were prepared in 1997 and 2004.

In 2013 the City adopted a Stormwater Master Plan (SWMP) as an ancillary document to the Comprehensive Plan. The SWMP deals with the portions of the storm drainage and collection system managed by the City of Milwaukie, including pipes and open channels. The SWMP addresses requirements of the City's National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer (MS4) permit to retrofit areas of the stormwater system for water quality improvement. In the SWMP, the City identified projects to alleviate system capacity deficiencies and improve water quality. Projects are prioritized in a stormwater capital improvement project list. As part of the development of the SWMP, review and update to the City's existing stormwater utility rate and service development charge was completed, in order to estimate funding needs to implement the identified capital improvement projects.

~~On two occasions within the last 15 years, the City has attempted to pass a levy for construction of storm drains. A 1987 Utility District proposal to fund a storm drainage trunk system failed. The method for funding needed improvements has been and continues to be a major issue within Milwaukie.~~

OBJECTIVE #6—DRAINAGE AND STREETS

To improve the storm drainage and collection system within the City, in order to alleviate seasonal flooding problems and to allow for permanent street and sidewalk improvements.

Policies

1. The City will promote the construction of a storm drainage system, with highest priority given to the drainage basins suffering the most severe flooding problems as identified on an ongoing basis.
2. The City will promote the construction of street, curb, and sidewalk/bikepath improvements coordinated with the construction of a storm drainage system, with highest priority given to streets designated as arterials, collectors, bikeway streets, or streets serving public transportation.
3. New and redevelopment will be designed to limit storm drainage runoff outside project boundaries~~, or~~ and will provide a storm drainage and collection system within the project area boundary.
4. The City will cooperate with other affected agencies in exploring regional solutions to the storm drainage problem.
5. The City will restrict development within drainageways to prevent erosion, regulate stormwater runoff, protect water quality, and protect and enhance the use of drainageways as wildlife corridors.
6. The City will require stormwater treatment for new and redevelopment in order to improve the water quality of receiving water bodies.

Clean Copy Amendments

Comprehensive Plan

CHAPTER 3—ENVIRONMENTAL AND NATURAL RESOURCES

OPEN SPACES, SCENIC AREAS, AND NATURAL RESOURCES ELEMENT

OBJECTIVE #2—NATURAL RESOURCES

Policies

3. Maintain and improve water quality of wetlands and water bodies by regulating the placement and design of stormwater drainage facilities.
6. Maintain and improve existing stormwater detention and treatment standards to ensure that the impact of development does not degrade water quality and wildlife habitat.

AIR, WATER AND LAND RESOURCES QUALITY ELEMENT

Background and Planning Concepts

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