Section 4: Basis of Planning

4.1 Introduction

The City has implemented programs, rules, policies and standards regarding stormwater management and design. Additionally, any private development must meet the requirements set forth by the City code. The City of Canby requires that all stormwater from private lots, except the downtown core area including 1st, 2nd and 3rd streets, is managed on-site.

4.2 Land Use and Development Area Projections

Conveyance system flows are based on land use information provided by the City and population projections completed by METRO. While storm flow estimates are governed predominantly by land use and impervious coverage, the population information is provided here to substantiate the expected timing of changes to land uses within the UGB. In general, it is assumed that future development in the northwestern part of the City and south of Hwy 99E will be managed with infiltration facilities and will not contribute additional surface discharges. Areas where new street development is anticipated in the vicinity of NE Territorial Road were added to the future surface drainage system model.

The 2010 census places the City of Canby's population at 15,829. The METRO Regional Population and Employment Range Forecasts [March 2009] report presents an estimated range of annual percentage growth rates for the Portland Metropolitan Statistical Area of 1.37% to 1.70%. Table 4.1 presents the census population for the City of Canby from 2010, as well as forecasted population for the City between the years 2015 and 2030, in five-year increments. The City population was predicted in five-year increments using both the low and high range growth rates estimated by METRO. The City of Canby's population is expected to approximately double over the 20-year time frame of this stormwater management plan. Based on this population projection, it was concluded that the majority of the area designated as residential in the comprehensive plan would be developed during this time frame, thus, future development was modeled as described above.

Table 4.1 City of Canby Population Forecast

Year	Predicted Population Low Range	Predicted Population High Range
2010	15,829	15,829
2015	17,998	18,520
2020	20,464	21,668
2025	23,268	25,352
2030	26,456	29,662
2035	30,080	34,705
2040	34,201	40,605

4.3 Flow Analysis

The SSA modeling software simulates rainfall-runoff response through land use analysis. Existing and expected future land use is used in conjunction with rainfall and hydrologic inputs to simulate the storm flow within a specified drainage basin or subbasin. The City's storm drainage systems are generally only managing runoff from the right of way, and were modeled as such. The modeled runoff is then time delayed and attenuated by traveling through the storm drainage conveyance and storage network. A complete discussion of flow generation by Storm and Sanitary Analysis can be found in Section 5.2.2

4.4 Guiding Principles

The following guiding principles are to be applied to the development of stormwater solutions and to the development of the overall master plan for the City of Canby:

- For the City of Canby's stormwater conveyance system, follow Public Works design guidelines and provide capacity to pass the 10-year storm events without surcharge, and provide capacity to pass a 25-year storm event with surcharge, but keeping the hydraulic grade line below the manhole lids.
- Use a combination of hard-piped system and open drainageway/natural systems to provide current and long-term stormwater service to the City of Canby.
- Whenever possible, design to the following preferences for stormwater management practices expressed by the City of Canby's Public Works employees:
  - Piping to centralized treatment is the preferred option, where logical. These centralized locations include the proposed treatment wetland at the Fish Eddy property.
  - The preferred LID alternatives to UICs are, in preferred order: pervious pavement, swales, rain gardens (if designed for easy maintenance and located toward the back of sites).
  - Buried stormwater management options such as trench drains should not be considered.
  - Swales need to be designed and located in such a way as to not present a safety hazard.
  - Curb extensions or 'Bump outs' on streets should not be considered as an option because residents will not appreciate the loss of parking spots.
  - UICs are ideal if they can be connected in series or 'daisy-chained' together to help manage overflows and reduce flooding.

4.5 UIC Retrofit Alternatives

UICs that are identified as requiring decommissioning based on the July 2012 UIC WPCF permit and results of the GWPD modeling will require retrofits to manage the stormwater previously directed to the UIC. The eight UICs in the City of Canby and the reason they require decommissioning are described in Section 3.4.2.2. Generally, UICs do not meet OAR 340-044 because of one of the following four conditions:

1. UIC intercepts groundwater
2. Insufficient vertical separation distance between the bottom of the UIC and high seasonal groundwater
3. Proximity to drinking water well with sampling results that exceed Effluent Discharge Limits (EDL) in permit
4. Monitoring results not meeting EDL in permit.

Retrofit alternatives are limited, based on the reason that a UIC requires decommissioning. Retrofit alternatives, the conditions when they can be used, and limitations on their use are provided in Table 4.2.

Table 4.2 UIC Retrofit Alternatives

Retrofit Option	Applicable Conditions*	Limitations
Add Surface Infiltration Facility pervious pavement vegetated swale rain garden curb extensions (green street)	1, 2, 3, 4	not for driving surface
Add Pretreatment stormwater planter sediment manhole proprietary filtration (eg.Imbrium, Contech)	1, 2, 3, 4	
Modify the Existing UIC shallow the existing UIC shallow the existing UIC and add additional shallow sump for capacity	1, 2	
Decommission and Replace UIC new shallow sump UIC horizontal infiltration trench or perforated pipe	2, 3	not under driving surface
Decommission and Redirect to Existing Stormwater System	1, 2, 3, 4	

Notes:

1 UIC intercepts groundwater

2 insufficient vertical separation distance between the bottom of the UIC and high seasonal groundwater

3 proximity to drinking water well with sampling results that exceed Effluent Discharge Limits (EDL) in permit

4 monitoring results not meeting EDL in permit