



## STAFF REPORT ACTION REQUIRED With Confidential Attachment

### Transfer of Ownership, Maintenance and Repair of Private Storm Drainage Systems & Catch Basins to the City

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| <b>Date:</b>                                | September 4, 2015   |
| <b>To:</b>                                  | Executive Committee   |
| <b>From:</b>                                | General Manager, Toronto Water<br>Chief Planner and Executive Director, City Planning<br>City Solicitor   |
| <b>Wards:</b>                               | All   |
| <b>Reason for Confidential Information:</b> | This report contains advice or communications that are subject to solicitor-client privilege and that relate to potential litigation that affects the City or one of its agencies, boards, and commissions. |
| <b>Reference Number:</b>                    | P:\2015\Cluster B\TW\EX15018  |

### SUMMARY

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The obligation to maintain and repair storm sewer systems and catch basins on private property rests with the owner of that private property. This obligation is further mandated by Municipal Code Chapter 629, Property Standards. City Council's policy, entitled "The Repair of Private Storm Drainage Systems" also places the obligation to operate, maintain and repair private storm drainage systems entirely on private property owners.

A failure on the part of a private property owner to maintain his or her private storm drainage system has been identified as a potential contributing factor to surface drainage problems and flooding on neighbouring private properties.

The purpose of this report is to report back on the requirements, implications, risks and liabilities associated with any proposal to transfer ownership and the associated maintenance and repair obligations for all existing and future private storm drainage systems to the City. The legal risks and implications are described in detail in Confidential Attachment 2 to this report.

There would be very significant implementation challenges, risks, and cost impacts to the City associated with the transfer of private storm drainage systems to the City.

The total number of affected properties is unknown. For illustration purposes, the potential cost to the City for the transfer of approximately 5,000 existing private rear yard catch basins and leads to the City is estimated at approximately \$215 million (in 2015 dollars) over a 40-year infrastructure life cycle span (noting that the cost to the City will be perpetual). This estimated cost does not include costs associated with condition surveys, asset assessment, engineering review, external service providers' administration, legal agreements and general administration.

In addition, the potential costs to the City, based on reasonable assumptions for transferring of ownership and maintenance of future leads and catch basins on private property to the City for new developments is estimated at \$170 million over 40 years (again noting that the cost to the City will be perpetual).

More details on the potential costs and assumptions are provided in Table 1 and Table 2, respectively, in Attachment 1 to this report.

There would also be very significant impacts and restrictions on owners' enjoyment and use of their private property arising from the transfer of private storm drainage systems to the City as such transfers would require the negotiation with each owner of an easement granting the City broad rights of access to meet its maintenance obligations or, failing such agreement, the expropriation of such rights from owners unwilling to voluntarily provide them.

Therefore, this report recommends that ownership and the associated maintenance and repair obligations for private storm drainage systems should remain with private property owners and that other approaches be explored for addressing surface drainage problems on private property.

## **RECOMMENDATIONS**

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The General Manager of Toronto Water, Chief Planner and City Solicitor recommend that:

1. City Council direct the City's Storm Water Management Steering Committee, as part of its long term work plan, to develop a strategy to aid in reducing flooding risks related to private storm drainage systems on existing private property and new developments.
2. In developing the strategy in Recommendation 1, the City's Storm Water Management Steering Committee consider:
  - a. The issues that impact surface drainage on private property, including:

- i. New developments - site plan reviews and revisions, and the adequacy of private catch basins, catch basin design standards, storm system drainage design standards;
    - ii. Individual site modifications (Building) - the impact of cumulative individual builds, permitting process review and inspection, grading certificates, etc.;
    - iii. Individual site modifications - changes to landscaping and grading on individual properties; and
    - iv. Maintenance of private storm drainage systems - adequacy of the Property Standards bylaw, private catch basin location data collection, including education and outreach for private property owners.
  - b. Current land development and storm water servicing processes and procedures and whether any revisions to these processes and procedures may be appropriate, e.g. development application reviews, approvals and inspections;
  - c. Applicable provincial legislation;
  - d. City bylaws governing storm water management and infrastructure on private property and whether any revisions to these by-law may be appropriate;
  - e. Opportunities for improvement in the short, mid, and long-term; and
  - f. Any impacts that may arise in respect to any proposed revisions to City processes, procedures and/or bylaws, or other proposed improvements.
3. The City's Storm Water Management Steering Committee report back to Council upon completion of the strategy noted in Recommendation 1.
  4. The confidential information in Attachment 2 remain confidential as it is subject to solicitor-client privilege and relates to potential litigation which affects the City.

## **FINANCIAL IMPACT**

There are no financial implications resulting from the adoption of these recommendations.

## **DECISION HISTORY**

At its meeting on March 7, 2006, the Public Works and Infrastructure Committee received for information a staff report from the Executive Director of Municipal Licensing and Standards and the General Manager of Toronto Water on approaches to resolving issues related to poorly maintained private catch basins and drain connections. That report noted that Chapter 629, Property Standards, of the Municipal Code (the City's "Property Standards Bylaw") provides that all catch basins, storm drains, ditches and swales shall be maintained by a property owner free from defects and obstructions. It also noted that Chapter 629 imposes a duty on the property owner to repair, maintain and keep clean the property in accordance with the standards and take immediate action to eliminate an unsafe condition. A copy of the Staff Report can be found at:

<http://www.toronto.ca/legdocs/2006/agendas/committees/wks/wks060307/it015c.pdf>

At its meeting on July 16 and 17, 2007, City Council adopted a policy entitled “The Repair of Private Storm Drainage Systems” confirming that the obligation to operate, maintain and repair private storm drainage systems rests entirely on the private property owner. The Council Decision Document and Staff Report (Item PW 7.7) can be found at: <http://www.toronto.ca/legdocs/mmis/2007/cc/decisions/2007-07-16-cc11-dd.pdf>

At its meeting on November 28, 2007, the Public Works and Infrastructure Committee received a staff report, entitled "Back Lot Drainage Reserve Fund", as requested by City Council at its July 2007 meeting. The report presented staff's recommendation against establishing a back lot drainage reserve, funded by a surcharge on grading and paving permits, to assist with resolving local area community drainage problems. The Staff Report to the Public Works and Infrastructure Committee can be found at: <http://www.toronto.ca/legdocs/mmis/2007/pw/bgrd/backgroundfile-8877.pdf>

At its meeting on December 16, 17 and 18, 2013, City Council amended a recommendation in a staff report entitled "Supplementary Report 238, 240, 242, 244, 250, 254, 256, 258 Finch Avenue East, Official Plan Amendment, Zoning by-law Amendment, and Draft Plan of Subdivision Applications – Final Report". Council directed that as a condition of subdivision approval a requirement that any proposed catch basins and leads on private properties that are to be connected to the municipal sewer for storm water management purposes shall be constructed to City standards and their ownership be transferred to the City and that any necessary easements shall be conveyed to the City for their future operation and maintenance all to the satisfaction of the General Manager, Toronto Water. The Council Decision Document and Staff Report (Item NY 28.30) can be found at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.NY28.30>

At its meeting on August 8, 2014, the Planning and Growth Management Committee requested that Toronto Water and City Planning report back to the Planning and Growth Management Committee in the first quarter of 2015 on options to require all storm sewer systems and catch basins within current private property and in new subdivisions and if possible within multi-residential townhouse developments to be publicly owned and maintained. The Planning and Growth Management Committee decision and Staff Report (Item PG 35.25) can be found at: <http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2014.PG35.25>

## **ISSUE BACKGROUND**

The *Building Code* defines a *storm drainage system* as an assembly of pipes, fittings, fixtures and appurtenances on a property that is used to convey water that is discharged from a surface as a result of rainfall, snow melt or snowfall. Under the *Building Code*, a *storm drainage pipe* includes the storm building drain, storm building sewer, rain water leader, catch basin and area drain installed to collect water from the property.

Accordingly, a storm drainage system includes the entire stormwater drainage system for a property including its downspouts.

As the term *storm drainage system* is a broadly defined term under the *Building Code*, it will be necessary to identify the specific infrastructure (e.g. catch basins and swales) that relates to the issue at hand to ensure that it does not have unintended consequences or application.

Catch basins also form part of a storm drainage system. Catch basins found in backyards, known as rear-lot catch basins, receive and direct the flow of stormwater and can form part of the storm drainage system for a property. They are typically located in the rear of a property where there is no overland flow path for surface water to leave the property. A private catch basin can provide an outlet for stormwater runoff to discharge to a municipal sewer.

Generally, connections of private storm drainage systems to the City's stormwater system are prohibited under Chapter 681, Sewers, of the Municipal Code (the "Sewers Bylaw"), unless an exemption is granted by the General Manager of Toronto Water. Subsection 681-11S(1) of Chapter 681 requires an owner to discharge storm water in a manner that is in compliance with the Property Standards Bylaw, unless an exemption is granted by the General Manager of Toronto Water for a connection to a combined or storm sewer.

In several areas across the City, the connection of private storm drainage systems to the City's stormwater system have been permitted to provide for surface drainage where there is no other technically feasible alternative or it would otherwise create a safety hazard.

When a private lead or catch basin directing the flow of storm water to the City's sewers is blocked or not functioning properly, stormwater runoff can begin to pond. Catch basins are not normally designed to convey the flows from minor storms, therefore, some ponding can be a normal circumstance of minor storms. During heavy rainfalls, increased ponding or flooding may occur in areas with blocked or poorly functioning catch basins impacting lands and buildings on the private property as well as adjacent properties.

Generally in developments where a private catch basin drains across more than one property, there are contractual arrangements setting out the respective rights and obligations of the owners of the catch basin, including any individual or shared costs for maintenance or repair of same. Where there are no such existing arrangements among the private property owners, the property owners must reach an agreement on such terms or rely on applicable laws. In some cases, the arrangements are several decades or a century old, not registered against the lands, and not known to the current property owners. In such a case new agreements must also be entered into by the property owners to address the existing common storm drainage system.

The obligation to maintain and repair private storm drainage systems rests with the owner of that private property. This obligation is mandated by the Property Standards Bylaw

which provides that all catch basins, storm drains, ditches and swales be maintained free from defects and obstructions and also imposes a duty upon the owner of property to repair, maintain, and keep clean the property in accordance with the standards, and take immediate action to eliminate an unsafe condition. Similarly, under sections 89 and 90 of the *Condominium Act, 1998*, condominium corporations have an obligation to maintain and repair their common elements which would include a storm drainage system.

City Council's 2007 policy, entitled “The Repair of Private Storm Drainage Systems” also places the obligation to operate, maintain and repair private storm drainage systems entirely on the private property owner. This policy also defines a private storm drainage system as that part of any drain or system of drains, including catch basins, drains, sumps or subsurface drainage pipe for surface or subsurface drainage of the land, lying within the limits of the private lands.

A failure on the part of a private landowner to maintain and keep in good repair his or her private storm drainage system has been identified as a potential contributor to surface drainage problems and flooding on neighbouring private properties.

If a private property owner is failing to maintain and keep in good repair a private storm drainage system (such as a catch basin) on his or her property or has obstructed it in some manner and refuses to address the issue and it affects neighbouring properties, those persons affected can refer the matter to the City's Municipal Licensing and Standards Division for investigation. Where there has been non-compliance with the Property Standards Bylaw, certain enforcement actions may be taken. A Municipal Licensing and Standards Officer may issue a Notice of Violation or an Order to Comply to the property owner requiring that the non-maintained or obstructed private storm drainage system located on their property be repaired. If an owner fails to complete the necessary repair prescribed in the Order to Comply within the specified time and the Order to Comply has been confirmed as required by the *Building Code Act, 1992*, the City may undertake the needed repair and recover the amount spent on the repair by adding the amount to the tax rolls.

The cause of ponding and flooding on private properties is complex and there are many issues that impact surface water drainage on private property in addition to the lack of maintenance and deterioration of private storm drainage systems. Other key issues include changes to the grading or the permeability of surfaces on the private property (e.g. landscaping, swimming pools, covering up of existing private side catch basins, installation of non-permeable surfaces such as paving stones, etc.) can modify the overland flow route and reduce surface drainage capacity on a private property on a private lot and neighbouring lots. Consequently, it is important to look at these issues holistically in order to identify the most effective solutions to address the problem of surface drainage and flooding on private property.

## COMMENTS

The transfer to the City of ownership and the associated maintenance and repair obligations for all existing and future storm drainage systems on private property is not recommended based on existing City policy, cost impacts, implementation challenges, risks, liabilities and implications. Accordingly, this report recommends that ownership and the associated maintenance and repair obligations for private storm drainage systems remain with private property owners and that other approaches be explored for addressing surface drainage problems on private property.

The issues are summarized below.

- Existing City Policy
- Maintenance Requirements
- Easement Requirements and Private Property Impacts
- Capital and Operating Costs
- City Staff Resource Impacts
- Risks, Liability and Cost Implications to the City
- Potential Implications related to Provincial and Federal Regulation of Sewage Systems

### Existing City Policy

As noted above, a transfer to the City of ownership of private storm drainage systems and its associated obligations is contrary to the "*Policy Regarding the Repair of Private Storm Drainage Systems*" adopted by City Council at its meeting on July 16 and 17, 2007. This Policy confirms that the obligation to operate, maintain and repair private storm drainage systems rests entirely on the private property owner. Staff continue to support the reasoning behind this Council Policy.

This Policy is based, in part, on the principle that private storm drainage systems are constructed, owned, maintained and repaired by or on behalf of private property owners for their benefit and not the City or general benefit of water and sewer ratepayers. In short, a private storm drainage system provides drainage for a private property while the municipal storm drainage system services public property (e.g. the road right of way). Maintenance of private properties is best left to the individual owners and users of those lands and premises.

This Policy also recognizes the significant cost impacts and liability risks to the City associated with assuming infrastructure on private property that was not installed by the City, may not meet City standards, and may be poorly maintained.

In 2013, subject to several conditions, City Council deviated from this Policy in a decision concerning a development on Finch Avenue East. City Council required, as a condition of subdivision approval for that development, that any proposed catch basins and leads on private properties to be connected to the municipal sewer for storm water management purposes shall be constructed to City standards; that their ownership be

transferred to the City; and that any necessary easements shall be conveyed to the City for their future operation and maintenance all to the satisfaction of the General Manager, Toronto Water. These properties will be subject to the easement and use impacts noted below.

The principle and rationale of the Policy remains valid today and the assumption of all existing and future private storm drainage systems by the City would be contrary to this Policy and the important principle of public vs. private infrastructure and the respective ownership responsibilities of the City and private property owners.

### Maintenance Requirements

To ensure a storm drainage system is working as it should, regular inspection and maintenance is required. When a storm drainage system is blocked or not functioning properly, stormwater runoff can begin to pond, rising to a level that may flood surrounding land and buildings. In some cases, a blocked rear yard catch basin can cause ponding of surface water on a number of adjacent properties. Any repairs are the responsibility of the private landowner.

The private property owner is in the best position to observe whether there is any excessive ponding occurring in his or her own backyard and to regularly check his or her property to ensure that the catch basin remains unobstructed and maintained. Neighbouring property owners potentially affected by the operation of the catch basin are also in a position to observe whether the catch basin is being kept clear of obstructions and properly maintained. The City is not in a position to have this ready and immediate ability to do so.

### Easement Requirements and Private Property Impacts

For the City to properly undertake its duties and obligations as an owner of a sewage system, it must have open, unrestricted and unobstructed access to, over and under the lands containing the private storm drainage system or catch basin for City personnel, vehicles and equipment. This can often be a significant challenge for the City.

As owner of the storm drainage system, the City must be in a position to respond with due diligence in accordance with applicable *Building Code* and *Ontario Water Resources Act*, as applicable, free from impediments or obstructions.

The transfer of ownership to the City of private storm drainage systems and the associated obligations of maintenance and repair would require the negotiation of easements in favour of the City to allow it to fulfill its obligations. It is reasonable to assume that many property owners would not be willing to grant the rights required by the City as described below.

For the City to properly carry out inspections, maintenance, repair, end-of-life reconstruction and other asset management/ownership duties, the City would require an



easement with open, unrestricted and unobstructed access to, over and under the lands containing the private storm drainage system or catch basin. This would also include open, unrestricted and unobstructed access for City personnel and its contractors, vehicles and equipment through the private property to the rear yard where the private storm drainage system is located.

The assumption of existing private storm drainage systems by the City would necessitate each private property owner removing any structures or impediments which may obstruct or impede the City's access or ability to undertake its asset management/ownership duties and obligations. These obstructions, structures or impediments may include fences, gates, trees, sheds, garages, pools, decks, gazebos, landscaping features or other structures installed on or near the storm drainage system or blocking or impeding access to it.

Planting of trees by the private property owner within a swale or catch basin area can alter drainage patterns or obstruct or impede maintenance and repair. Removal of trees can become very problematic and delay the undertaking of maintenance and repairs.

As the City would be the owner of the storm drainage system, in such circumstances, it must be in a position to respond diligently in accordance with applicable provincial and federal legislation, free from impediments or obstructions. A control manhole, in some cases, may need to be installed on the private lands.

In some instances, the physical constraints of existing buildings on the private lands may not allow for proper access, maintenance or repair by the City. There may be no access for vehicles or equipment where dwellings are very short distances apart or where infill development has closed off prior access points.

Where existing buildings prevent access with vehicles, the City may have to effect maintenance and repairs by hand digging which would greatly increase maintenance and repair costs for the City. It would also greatly increase the time to complete the work, lengthening response times and the inconvenience to the property owner.

The removal of any existing encroachments would significantly complicate negotiating and obtaining the easements. If these encroachments were allowed to remain in place, it would severely limit or entirely prevent the City's ability to carry out its duties and obligations to inspect, maintain and repair the storm drainage system. Additional risks and liabilities are set out in the confidential attachment to this report.

The cost to obtain the City easements for these storm drainage systems will include administrative, surveying, acquisition and registration costs (noted in Attachment 1).

As noted above, an easement would prohibit the placement or installation of any buildings, structures, trees, obstructions or impediments on the easement lands and access points. Consequently, the existence of these easement rights over these private properties will impact the property owners' current and future use and enjoyment of their lands as well as potentially lessen their property values.

## Capital and Operating Costs

The transfer of ownership to the City of private storm drainage systems and the associated obligations of maintenance and repair would result in additional costs to the City negatively impacting its Capital and Operating Budgets.

Inspection, maintenance, repair and replacement costs will be perpetual costs to the City for the infrastructure unless these costs are all passed directly on to the subject private lands as the benefitting properties of City sewer services.

Where there is existing infrastructure constructed or installed by third parties in a manner or with materials that do not meet City standards, the City will incur increased costs associated with this including the need for capital improvements, more frequent inspections, maintenance and repairs.

Where the existing storm drainage system has not been properly maintained or kept in a proper state of repair by the private property owner, the City will incur increased costs arising from the private property owner's failure to maintain his or her own property. This would also include the need for capital improvements, more frequent inspections, maintenance and repairs.

Additionally, these circumstances may result in a reduced life expectancy of the infrastructure above and beyond the City's typical planned infrastructure maintenance and repair programs.

There would also be costs to the City associated with the need to acquire easements on private property for future storm drainage systems on private property.

For illustration purposes and based on best available information, the potential cost to the City for the transfer of approximately 5,000 existing private rear yard catch basins and leads to the City is estimated at approximately \$215 million (in 2015 dollars) over a 40-year infrastructure life cycle span (noting that the cost to the City will be perpetual). This estimated cost does not include costs associated with condition surveys, asset assessment, engineering review, external service providers' administration, legal agreements and general administration.

The potential costs to the City, based on reasonable assumptions for transferring of ownership and maintenance of future leads and catch basins on private property to the City for new developments is estimated at \$170 million over 40 years (again noting that the cost to the City will be perpetual).

Neither of the above estimates include those costs associated with any transfer to the City of other storm drainage system infrastructure (e.g. tanks and ponds) on private property, only leads and catch basins. Accordingly, any additional infrastructure would result in a significantly higher cost.

More details on the potential costs and assumptions are provided in Table 1 and Table 2, respectively, in Attachment 1 to this report.

These costs also do not include those related to potential risks and liabilities.

#### City Staff Resource Impacts

In addition to the estimated capital and operating costs identified above, there would be significant staff resource impacts on Toronto Water District Operations and Legal Services related to assuming ownership of these private storm drainage systems. The City, as owner of the infrastructure, would be required to undertake reasonable inspections of thousands of these newly acquired storm drainage systems that were not previously its responsibility. Additionally, Toronto Water would have to respond to storm drainage complaints on private property that were previously civil matters between private property owners and not within Toronto Water's mandate. These factors would put a significant strain on resources and, among other issues, significantly impact the service response time for inspections and remediation of existing City infrastructure during significant storm events. Additional risks and liabilities are set out in the confidential attachment to this report.

#### Risks, Liability and Cost Implications to the City

The transfer of ownership to the City of private storm drainage systems and the associated obligations of maintenance and repair would result in the imposition of unnecessary risk, costs and liability on the City. These items are discussed in the confidential attachment to this report.

#### Potential Implications Related to Provincial and Federal Regulation of Sewage Systems

In addition to the City's Property Standards Bylaw and Sewers Bylaw, storm and sanitary sewer service systems are regulated by a number of Provincial and Federal statutes and regulations. Provincially, these include the *Ontario Water Resources Act* under the jurisdiction of the Ministry of the Environment and Climate Change and the *Building Code Act, 1992* and *Ontario Building Code* under the Ministry of Municipal Affairs and Housing. Federally, the *Wastewater Systems Effluent Regulations* under the *Fisheries Act* may also apply.

A distinction is made in these Acts and Regulations between publicly and privately-owned and/or operated storm water systems. In respect to sewage systems, the *Building Code* generally applies within the boundaries of private lands. Where the jurisdiction of the *Building Code* ceases the *Ontario Water Resources Act* applies. The proposal for the City to undertake ownership of private storm drainage systems potentially blurs this regulatory line.

Further implications are set out in the confidential attachment to this report.

## **A Way Forward – The Stormwater Management Steering Committee**

In 2014, a Stormwater Management Steering Committee (SMSC) was established within the City to address storm water impacts on private property and make recommendations to mitigate future impacts.

The objective of the SMSC is to review processes, regulations, and bylaws that govern the modifications and/or maintenance of private property as it relates to storm water management infrastructure. The Committee will identify opportunities for improvement and assess the impacts of proposed changes.

The SMSC membership includes various City divisions that are involved in stormwater management issues on private property, including City Planning, Engineering and Construction Services, Municipal Licensing and Standards, Toronto Building, Toronto Water, and Transportation Services. The Office of the Deputy City Manager also participates on the Steering Committee.

The Steering Committee has discussed the creation of a number of Working Groups to examine storm water management issues in the following key areas:

- New development – site plan reviews and revisions, adequacy of private catch basins;
- Individual Site Modifications (Building) – cumulative impact of individual builds, adequacy of legislation, permitting process, role of grading certificates;
- Individual Site modifications – review of impacts of landscaping and swimming pool installation, and changes of property grade; and,
- Maintenance of private property storm water infrastructure – property standards bylaw and enforcement, etc.

Due to the multi-faceted nature of surface water drainage and flooding problems on private property and the many City divisions that are involved in the issue, a holistic approach is required to identify the most effective solutions. Given the mandate of the SWMC, it is recommended that the SWMC, as part of its long-term work plan, develop a strategy that includes opportunities and recommendations to aid in reducing surface ponding and flooding related to existing and future private storm drainage systems. It is recommended that the SWMC and participating divisions report back to Council upon completion of the aforementioned strategy, which is expected by September 2016.

## **Conclusion**

In conclusion, there are very significant implementation challenges, risks, and cost and resource impacts to the City associated with the transfer of private storm drainage systems to the City.

There would also be very significant impacts and restrictions on an owner's enjoyment and use of his or her private property arising from the transfer of private storm drainage systems to the City as well as potential property value effects.

Based on the implications identified in this report, it is recommended that ownership and the associated maintenance and repair obligations for private storm drainage systems remain with private property owners in accordance with the exiting 2007 City Council Policy and that other approaches be explored for addressing surface drainage problems on private property.

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## SIGNATURE

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## ATTACHMENTS

1. Potential City Costs – Estimates and Assumptions
2. Confidential Attachment – Risks, Liability and Cost Implications to the City

## **Attachment 1 – Potential City Costs - Estimates and Assumptions**

**Table 1 – Potential Costs for Transferring Ownership and Maintenance of Existing Private Catch Basins to the City**

| <b>Cost Component</b>  | <b>Assumptions</b>   | <b>Estimated Total Cost (over a 40 year life cycle) *</b> |
|--|--|---|
| <b>Easement Costs</b> – includes legal survey and land costs associated with the creation of new easements | <ul style="list-style-type: none"><li>• 5,000 private catch basins to be transferred to the City (approximately 4,400 catch basins have been identified in a previous inventory)</li><li>• Legal survey cost of \$3,000 per catch basin</li><li>• Land cost for City easement at \$6,000 per catch basin</li></ul> | \$45 million  |
| <b>Replacement Costs</b> - includes costs for replacement of catch basins and leads over their life cycle  | <ul style="list-style-type: none"><li>• 5,000 private catch basins and leads to be replaced over a 40 year life cycle</li><li>• \$16,000 replacement cost per catch basin and lead</li></ul>   | \$80 million  |
| <b>Operations Costs</b> - costs for inspection, maintenance and cleaning of catch basins                   | <ul style="list-style-type: none"><li>• 5,000 private catch basins and leads to maintained over a 40 year life cycle</li><li>• \$18,000 maintenance cost per catch basin and lead</li></ul>  | \$90 million  |
| <b>Total Cost Estimate</b>   |  | <b>\$215 million</b>                                      |

\*Estimated total cost in unadjusted 2015 dollars

Table 2– Potential Costs for Transfer of Ownership and Maintenance to the City of  
Future Catch Basins on Private Property to the City

| <b>Cost Component</b>   | <b>Assumptions</b>   | <b>Estimated Total Cost<br/>(over a 40 year life<br/>cycle) *</b> |
|---|--|---|
| <b>Replacement Costs -</b> includes costs for replacement of catch basins and leads over their life cycle | <ul style="list-style-type: none"> <li>• 5,000 private catch basins and leads to be replaced over a 40 year life cycle</li> <li>• \$16,000 replacement cost per catch basin and lead</li> </ul>  | \$80 million  |
| <b>Operations Costs -</b> costs for inspection, maintenance and cleaning of catch basins                  | <ul style="list-style-type: none"> <li>• Approximately 10 new subdivisions per year with 20 catch basins each</li> <li>• Approximately 200 new catch basins per year (or 8000 over 40 years) added to the City's infrastructure</li> <li>• \$18,000 maintenance cost per catch basin and lead</li> </ul> | \$90 million  |
| <b>Total Cost Estimate</b>  |  | <b>\$170 million</b>  |

\*Estimated total cost in unadjusted 2015 dollars