

GUIDE TO USING THE MUNICIPAL CONSTRUCTION STORMWATER SITE INSPECTION TOOLKIT ELECTRONIC CHECKLISTS

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Note:

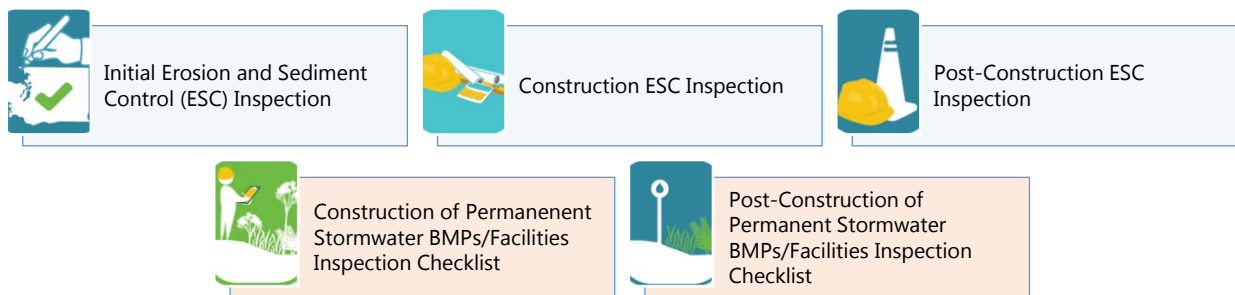
Some pages in this document have been purposely skipped or blank pages inserted so that this document will copy correctly when duplexed.

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INTRODUCTION

This guide provides instructions on using a set of electronic checklists to support pre-, during, and post-construction stormwater site inspection activities. The five checklists are available for download in three different formats: Microsoft Word document, fillable PDF, and electronic Survey123 form. These tools were developed as part of a Grant of Regional or Statewide Significance from the Washington State Department of Ecology (Ecology). Input was provided by a regional group that included the City of Tumwater, City of Lacey, City of Olympia, and Thurston County. The overall goal of the project is to support compliance with the municipal stormwater National Pollutant Discharge Elimination System (NPDES) permit by improving effectiveness of municipal construction site inspectors and providing a more consistent site inspection framework that can be implemented in Washington jurisdictions. The five checklists include:



These checklists are accompanied by two fact sheets to support implementation and adaptation of the checklists by local jurisdictions. All materials are available for download on the Washington Stormwater Center Website at <<http://www.wastormwatercenter.org/stormwater-construction-site-inspection-resources>>. This guide will address the following:

- Accessing and deploying the checklists in the field
- Adapting checklists to meet local needs
- Options for streamlining data collection and output

Accessing and Deploying the Checklists in the Field

1. Download the Survey123 **.xlsx** files provided with this toolkit. Each of the five field forms has its own **.xlsx** file:
 - Checklist1_InitialESC
 - Checklist2_ConstructionESC
 - Checklist3_PostConstructionESC
 - Checklist4_ConstructionPermanentBMPs
 - Checklist5_PostConstructionPermanentBMPs
2. Download and install the Survey123 Connect for ArcGIS desktop application:
<www.arcgis.com/home/item.html?id=9a0a850521174e78b8d08d3a66cbf34c>.
3. Launch Survey123 Connect for ArcGIS and log in using your organization's ArcGIS Online (AGOL) credentials.
4. Select **New Survey** and the **File** radio button. Click on **Browse for XLSForm** and navigate to the location where you saved **Checklist1_InitialESC.xlsx**. Change the title of the survey to **Initial ESC Inspection** and click **Create Survey**.

The screenshot shows the 'New Survey' dialog box in the Survey123 Connect for ArcGIS application. The window title is 'New Survey - Survey123 Connect for ArcGIS'. The main title bar is green and says 'New Survey'. Below that, there is a 'Title' field with the text 'Initial ESC Inspection'. Underneath the title field, it says 'Table name will be: Initial_ESC_Inspection'. The next section is 'Select an initial XLSForm design', which has a list of radio buttons: 'Templates', 'Samples', 'Community', 'My Surveys', 'My Organization', 'Feature Service', and 'File'. The 'File' radio button is selected. To the right of this list is an 'XLSForm File' field with the path 'C:/Users/kwingrove/Downloads/Checklist1_InitialESC.xlsx' and a 'Browse for XLSForm...' button. At the bottom left, there is a user profile icon and the name 'Katie Wingrove'. At the bottom right, there are 'Create Survey' and 'Cancel' buttons.

5. To publish the survey to your AGOL account so that it is available on your mobile device, click the cloud on the left side of the form preview and then click **Publish Survey**.

Survey123 Connect for ArcGIS

Form Preview Schema Preview Settings

Checklist 1 Initial ESC

The initial erosion and sediment control (ESC) inspection should be conducted after the pre-construction meeting and installation of temporary best management practices (BMPs), but prior to any clearing, grubbing, or grading at the site. This inspection is required for sites with a high potential for sediment transport.

- ▶ Project Information
- ▶ Property Owner Information
- ▶ Inspection Information
- ▶ Contractor Information
- ▶ Certified Erosion and Sediment Control Lead (CESCL)
- ▶ Documentation

▼ Element 1: Preserve Vegetation / Mark Clearing Limits

Are the following clearly marked?

(1) Project clearing limits/perimeter (2) Sensitive/critical areas and buffers (3) Protected trees/vegetation

Validate Input

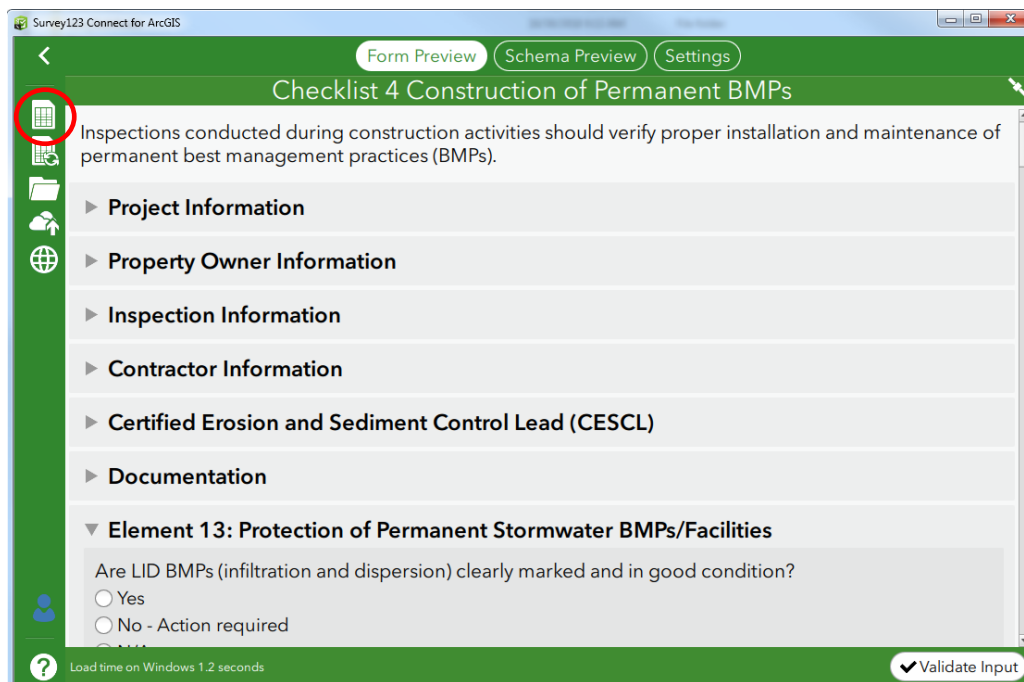
Load time on Windows 0.7 seconds

6. Repeat steps 4 and 5 for all five checklist files. Each checklist will be stored as a separate survey.
7. Download the free Survey123 data collection app to your mobile device from your device's app store. Log in using the same AGOL credentials that you used to publish the form. Inside the app, go to "Download Surveys" and download each checklist to the mobile device.
8. Complete construction site inspections in the field by filling out the form for each type of inspection as needed. Make sure to:
 - a. Identify your location using the interactive map in **Project Information**.
 - b. Take detailed notes and photos for any inspection items that require corrective action. *Communicate with the contractor and follow your local jurisdiction's procedures regarding enforcement of corrective actions.*
9. After completing the site inspection in the field, log in to <<http://survey123.arcgis.com>> using your AGOL credentials and click on your published form.
10. Click on the **Data** tab on the top of the page and then select **Export** and **File Geodatabase**. This will download all of your inspection data (point locations) and any attached photos. This may take several minutes depending on the number of photos you have taken. Data can be exported in alternative formats; see **Options for Streamlining Data Collection and Output** in this guide.

Adapting Checklists to Meet Local Needs

Jurisdictions can alter these forms as needed to suit local procedures. Because the checklists were produced using Survey123 Connect, the form structure cannot be edited in the online Survey123 drag-and-drop interface. However, the **.xlsx** files can be modified using the Survey123 Connect for ArcGIS desktop application. Users can edit language, add/remove questions, adjust multiple choice responses, etc. ESRI currently provides resources on their website under “XLSForm Essentials” to help new users understand editing procedures and other advanced features that users might like to incorporate, such as cascading or external selects, built-in formulas, etc.

To edit a checklist, open the Survey123 Connect for ArcGIS desktop application, launch the checklist, and **open the XLSForm**.



The **.xlsx** file can then be edited, but users will have to republish the survey; and all users must re-download on any mobile devices. A note of caution for making edits to the checklists: data losses can occur if a survey is edited and republished after data has already been collected in the field.

For more information regarding adaptation of the electronic forms, see the ESRI website:

<<https://doc.arcgis.com/en/survey123/desktop/create-surveys/xlsformessentials.htm>>

Options for Streamlining Data Collection and Output

The electronic checklists produced as part of this grant project provide basic functionality for streamlined, consistent field inspections using a mobile device. When the “survey” (checklist) is submitted, data can be viewed online and exported (either as a single record or a batch of records) via the **Data** tab as shown in **step 9** of this guide. There are multiple options for exporting, printing, and sharing data. Data formats include spreadsheet-style outputs as a geodatabase, shapefile, excel file, KML, or CSV format. Geodatabase or shapefile exports can be used to produce maps of the points taken at various inspection locations, which could then be symbolized by status or used for other tracking and planning purposes.

If a print-style export is needed to share with contractors or other parties, one quick option is to select the record of interest and print the default view PDF directly from the **Data** tab. This option provides limited format control. If more formatting control is desired, users can create a custom Excel or Access template to load exported data into report format. Another option is the “Feature Report” function in Survey123 online, which allows the user to import a template and export a report directly from the online interface (note: this option may consume credits in a future update of ArcGIS online).

Note: The Survey123 application is frequently updated by ESRI. Functionality described in this guide is subject to change.

In addition to options for exporting data, there are strategies available to further streamline the inspection process by pre-populating data. ESRI has detailed information available for using default answers, calculations, and working with external content (such as a CSV file) that can be loaded onto the mobile device and used to pre-populate information. This may prove especially useful for speeding up data entry in the Project Information section of the checklists. Jurisdictions are encouraged to use and adapt the checklist features to best suit local procedures and practices for streamlined, consistent inspection documentation.

For more information on pre-populating answers and working with external content, see the ESRI website:

<<https://doc.arcgis.com/en/survey123/desktop/create-surveys/prepopulateanswers.htm>>

