



The following documents were created by FCA with input from the Columbia Basin Fish and Wildlife Authority's Fish Screening Oversight Committee to create a consistent and efficient process for siting a Farmers Screen. These documents reflect 5 years of project development experience with the Farmers Screen including installation of 19 screens in 4 states.

The Documents:

The Farmers Screen Site Selection Vetting Map: A visual guide to FCA's process and how a project moves through and is either ultimately chosen or rejected as a good fit for a Farmers Screen.

The Farmers Screen Site Selection Process: A written explanation of FCA's process of either selecting or rejecting a site and how these documents guide the process.

The Farmers Screen Siting Criteria Checklist: A list of the site attributes necessary for a Farmers Screen to function properly at any given site.

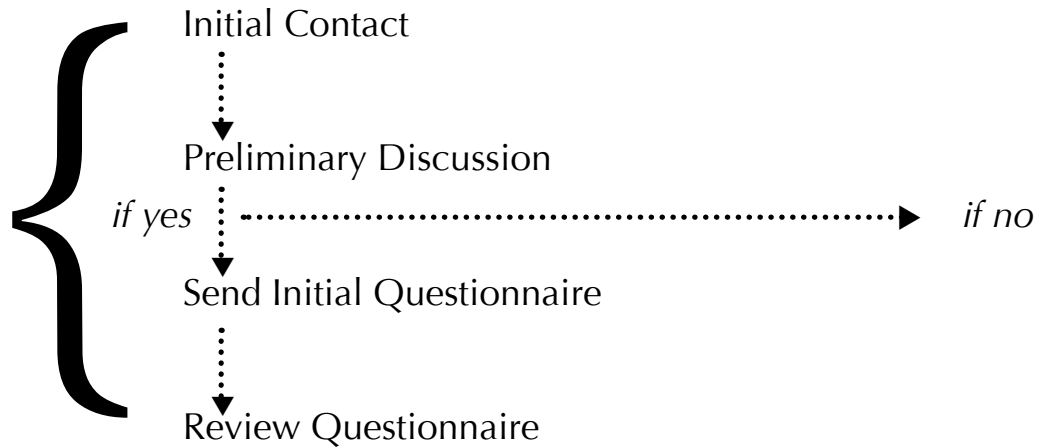
The Farmers Screen Initial Questionnaire: A list of questions to be asked about a potential screen site in order to determine if the site has attributes that would warrant a site visit and further investigation.

The Farmers Screen Site Evaluation Form: If the initial questionnaire provided information that shows that a site potentially has the right attributes for a Farmers Screen to work, then a site visit follows. This document contains a list of questions and information that must be gathered on site in order to make a determination about potentially installing a Farmers Screen at that particular site.

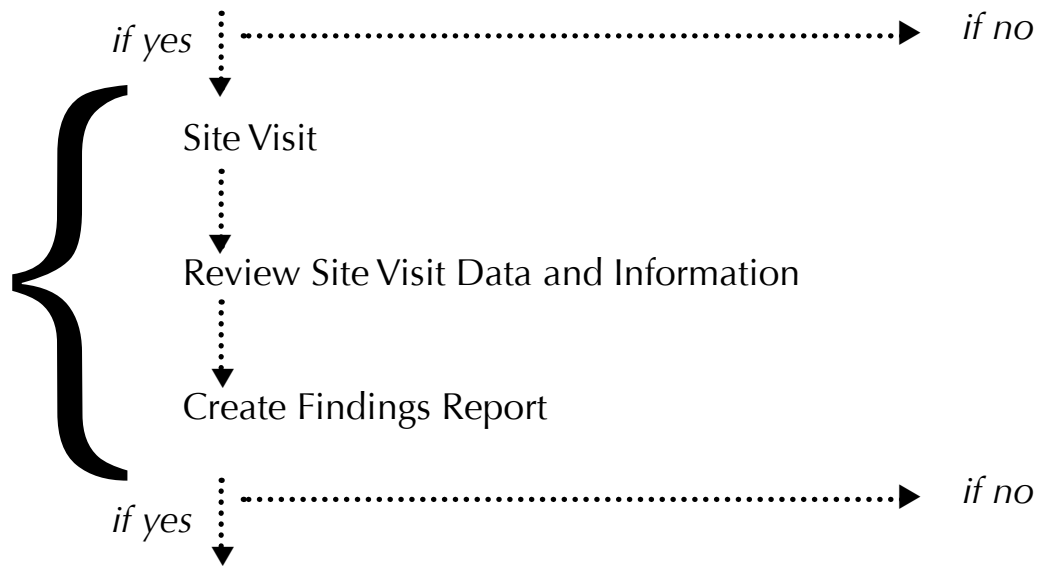


Farmers Screen Project Vetting Map

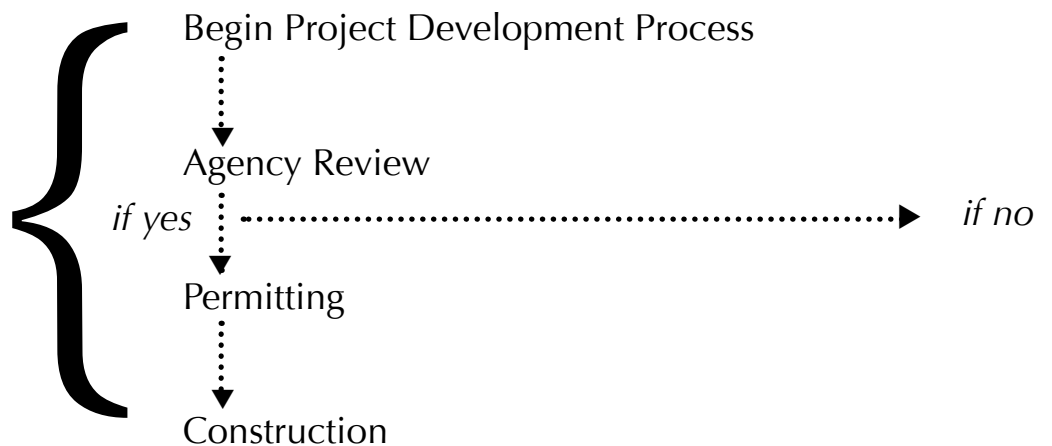
STEP 1



STEP 2



STEP 3



STEPS = for details and vetting considerations taken in each step, refer to Farmers Screen Site Selection Process document.

if yes = meets site requirements, project proceeds to next step.

if no = does not meet requirements. Projects that do not meet the Farmers Screen site requirements are referred to an agency or company that can provide other screening options.



Farmers Screen Site Selection Process

Farmers Conservation Alliance (FCA) has developed a method for evaluating potential Farmers Screen sites through a two step process. This process was developed over a four year period as FCA performed over a hundred site visits all around the Pacific Northwest to evaluate potential sites for Farmers Screen installations. The process was developed with an eye to efficiency for both FCA and the landowner. It is expensive and time consuming to evaluate potential sites and therefore is imperative that a system allows FCA to determine as quickly as possible whether or not a site is appropriate for a Farmers Screen installation.

Step 1: Information Gathering

Typically, either a landowner or a third party interested in screening a diversion contacts FCA to learn more about the Farmers Screen. At this point, FCA attempts to gather as much information as possible about the site and the project in general. The Farmers Screen Initial Questionnaire contains a complete set of questions that FCA attempts to answer either through a phone call, email, or standard mail. This form is designed to provide enough information to determine if a site visit is warranted. The questions ask for specific information that will help determine whether or not the site meets The Farmers Screen Siting Criteria Checklist as outlined in the document bearing the same name.

Once The Farmers Screen Initial Questionnaire has been completed, FCA staff reviews the information (and follows up for more information if necessary) and makes a determination based on The Farmers Screen Siting Criteria Checklist as to whether or not a site visit is warranted to gather more detailed information. If a site does not meet The Farmers Screen Siting Criteria Checklist at this point, it is deemed to be an inappropriate site for the Farmers Screen. The land owner or project coordinator is then notified and given as much information on alternative screen technologies as FCA can provide.

Step 2: Site Visit

If the information from The Farmers Screen Initial Questionnaire conforms to The Farmers Screen Siting Criteria Checklist, then a site visit is scheduled. The purpose of a site visit is to confirm the information provided in The Farmers Screen Initial Questionnaire and to gather additional information. To ensure comprehensive data collection on site, FCA uses the Farmers Screen Site Evaluation Form. The Farmers Screen Site Evaluation form is

designed to gather the maximum amount of information in a single visit.

The actual site visit provides an opportunity to gather more detailed data, information, and observations as to the specific conditions at the site. The site visit provides preliminary survey data that will determine the elevation differentials which in turn allows FCA to have certainty as to the applicability of a specific site. Also, evaluation of existing infrastructure, river or stream conditions, geomorphologic information, and general observations of the site provide a much better understanding of the challenges associated with a particular site and therefore an understanding of the applicability of the Farmers Screen on that particular site. The site visit is a time when FCA staff can directly question the landowner, any agency representatives, and any other project participants about stream flows, sediment, debris, and diverted water quantities. For small streams, this information is typically anecdotal, but that is often the only information available.

After the site visit, all gathered information from both The Farmers Screen Initial Questionnaire and The Farmers Screen Site Evaluation form is combined into one document that summarizes the project information. FCA staff then reviews the information to evaluate the applicability of the Farmers Screen for that particular site. If the site does not meet The Farmers Screen Siting Criteria Checklist, or for any other reason does not appear to be a good fit for FCA or the Farmers Screen, then the landowner or project coordinator is notified and informed that the Farmers Screen is not appropriate for that site. Recommendations are made for other technologies that might be appropriate and who to contact for more information.

If the site does appear to be appropriate for the Farmers Screen, then the landowner or project coordinator is asked to sign the project information document, declaring that the information is true to his/her knowledge and that they understand that the project will be developed based on that information. At this point, actual project development begins in conjunction with any and all project partners including all applicable state and federal agencies.

Step 3: Project Development

Project development involves developing a site plan, determining any necessary infrastructure to support the Farmers Screen, screen location, screen structure elevations, and the appropriate return route and elevations. Project development is done in conjunction with all applicable resource agencies.

Again, if at any point in this process it is determined that the Farmers Screen is not an appropriate technology for the site, then the project coordinator or landowner is notified and provided with alternative screen information.



Farmers Screen Siting Criteria

A potential screen site must have all of the following characteristics to be appropriate for installation of a Farmers Screen:

1. The proposed site must be located off-channel, and the flow to the screen must be controlled with a properly functioning head gate.
2. There must be adequate flow in the stream to ensure that the proper amount of by-pass flow (necessary for the particular screen to operate properly), in addition to the desired screened flow, is available 100% of the time that the screen is operating. The by-pass flow required is a direct function of the screen design and will be determined when the flow range of the screen is determined.
3. A screen owner/operator must be willing to agree to operate the screen as designed and as specified in the Operation Manual.
4. The water at the leading edge of the screen must be of steady uniform flow at a velocity of between 3 and 7 feet per second. There must be sufficient gradient from the point of diversion to the leading edge of the screen to induce the required flow characteristics.
5. A minimum total head differential (potential energy) of 0.3 feet, as measured from the flume water surface elevation to the attenuation bay water surface elevation is required for proper screen function in order to overcome head loss through the screen and into the attenuation bay.
6. The slope of the source river or stream must exceed the slope of the diverted water conveyance such that the elevation differential between the screen surface elevation and the stream (at the point where the by-pass water return pipe enters the stream) is sufficient to meet NMFS criteria regarding by-pass flow hydraulics.
7. There must be adequate land to locate the screen structure in a place that is protected from high flow events.



Farmers Screen Initial Questionnaire

This form is designed to gather preliminary information that will help FCA to determine how we can best serve your particular organization. The information will be confidential and will not be released to another party without your permission. If this information is provided to a government agency, it will no longer be confidential. We realize that some of the requested information may not be available, however providing as much information as possible early in the process will help us to save time and money for our organization and yours.

1. Organization name (owner of water right)
2. Is there more than one water user? If yes, how many?
3. Public or privately held?
4. Contact name and title
5. Address, phone, fax, email, web address

6. Location of diversion to be screened (city, county, state, water source diverting from, GPS coordinates if available)
7. Is the diversion on private or public land? If public, is it local, state, or federal?
8. Is the diversion currently screened and if so, what type of screen? Is it working? And, what problems have you encountered with the screen?
9. Does the diversion currently have a headgate?
10. Is there a dam associated with the diversion?

11. How is the water conveyed from the water source to the screen location? (canal or pipe)
12. Is there a hydroelectric project associated with this diversion?
13. Has a site survey been completed? If so, can you supply the survey?
14. What is the gradient in the conveyance (% slope)?
15. What is the gradient in the river or stream to be diverted from?
16. Basin, sub-basin located in:
17. Name of Watershed Group and Water Conservation District?
17. Water right (quantity, type of use, permit number, and date):
19. What is the maximum quantity of water diverted? How was this determined (estimate, gauging station, etc.)?
20. What is the minimum quantity of water diverted? How was this determined?
21. At any time during the year do you take 100% of the available water?
22. At any time of the year do you have difficulty getting your water right?
23. Is there stream flow data available?
24. Is water diverted year round?
25. What are your high and low water temperatures during the year? Do you ever experience freezing issues while diverting?
26. Do you have sediment, debris, or algae problems at this site? If so, what times of the year are of concern? Any details available will be helpful in determining scope of the project.
27. Is the diverted water transported in a canal or is it piped? This information helps with the initial design process.

28. Who do you work with at the state and federal agencies? (ODFW, DSL, USFW, Forest Service, NOAA Fisheries, etc.). FCA has positive relationships with all of the applicable agencies and will assist your organization in obtaining permits and in working for a positive outcome for all parties.

29. Are you interested in applying for grant funding and if so would you like FCA to apply on your behalf? Grant funding is dependent on many factors including species of fish present and the presence of threatened or endangered species. If you feel comfortable sharing information about all species present, we can use the information to determine what grant funds your organization might be eligible for. If an agency has taken an enforcement action against your organization, it would be important to disclose this information now because it has a large impact on the funding available for your project.

Please return the completed questionnaire to:

fca
14 Oak Street, Suite 302
Hood River, OR 97031

Email: info@fcasolutions.org
Questions: 541.716.6085



Farmers Screen Site Evaluation

The site evaluation is the second tier in evaluation of a potential project. The information gathered during the site visit is meant to provide enough information to either confirm that the site is appropriate for a Farmers Screen or to determine that another technology or solution would be necessary. It is essential that as much information is gathered during the site visit as possible. If acceptable to the landowner, state and federal agency representatives should be invited.

Equipment Checklist:

- Still Camera
- Video Camera
- Tape Measure
- Laser Level
- GPS Receiver
- Flow Meter

Site Information:

(include city, state, watershed, river or stream name, FCA project name)

Invited Attendees:

Actual Attendees:

Date:

GPS Coordinates:

Elevation:

Soil Type:

Describe existing infrastructure:

Conveyance: (canal or piped)

Photos:

- Point of Diversion
- Upstream
- Downstream
- Diversion structure
- Head gate
- Conveyance
- Potential screen site(s)
- Potential return flow point(s)
- Access
- Existing screen

Video:

- Stream conditions (up and down stream)
- Diversion function including head gate
- Conveyance
- Existing screen

Survey: (If possible, shoot and record the following elevations)

- Top of Diversion Structure
- Any other infrastructure (headgate, screen structure, weir, etc.)
- Top of water and high water mark in stream at diversion point
- Top of water and high water mark 100' above diversion point
- Top of water and high water mark 100' below diversion point
- Top of water, invert, and high water mark in conveyance:
- Just behind head gate or at beginning of diversion
- 50' down conveyance
- 100' down conveyance
- Any other relevant points

Sketch Site Plan Including:

- River or stream (up and downstream)
- Diversion Point
- Conveyance
- All existing structures
- Potential screen locations
- Potential return points

Questions to Ask:

(please identify who is answering the question)

1. What is the largest amount of water that is diverted during the year in CFS?
How was this determined?
2. What is the smallest amount of water that is diverted during the year in CFS?
How was this determined?
3. Is by-pass flow available at all times?
4. Is there any time of the year when 100% of the water is diverted?
5. Is there any time of the year when it is difficult to get your water right?
6. Characterize the sediment or bed load in the system including timing and duration.
7. Characterize organic debris in the system including timing and duration.
8. Are there any records or data available regarding stream flow, diverted quantities, sediment, or bed load?
9. What is the soil like on the site? Is it likely that the ditch will seal around the structure?

Notes: