

Component 2: Native Seed Supply

2012 Annual Report



Prepared for:

Trustee Council for Natural Resources at Rocky Flats

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This native seed supply project is the second of two components in Jefferson County Nature Association's (JCNA) seven year program to enhance restoration of the Rocky Flats Site (Site), including both the DOE Legacy area and the Rocky Flats National Wildlife Refuge (Refuge). Originally unplowed native grassland, the Site has been subject to former nuclear operations and other activities that have modified or destroyed much of its native vegetation over the past decades. Noxious weeds have invaded many disturbed areas on and near the Site and their successful control requires considerable effort. This native seed supply project will provide locally adapted seed for use on previously disturbed areas at the Site. The first component, coordination of weed control, will increase awareness and effectiveness in weed control on and near the Site. Both project components will enhance the quality and native diversity of plant communities and habitat.

In compliance with JCNA's final proposal to the Trustee Council for Natural Resources at Rocky Flats, this 2012 annual report on the native seed supply project does the following: A. Details the picking program; and B. Lists recommendations for future efforts. The contract for this program was awarded on September 21st, 2009, shortly before seed picks were conducted in October and November. The 2012 seed picking and volunteer outreach efforts were solidly grounded in the 2009, 2010, and 2011 efforts.

A. PICKING PROGRAM DETAIL

1. Picking Information.

The three seed picks scheduled in 2012 were to be at three different locations: the Refuge in September, the Jewel Mountain Open Space in October, and the Ranson-Edwards Open Space in November (Map 1). Permission to pick at the three sites used in 2012 was graciously granted by the group managing the location: U.S. Fish and Wildlife Service (USFWS) for the Refuge, City of Boulder for Jewel Mountain Open Space, and Jefferson County for Ranson-Edwards Open Space.

However, as fall approached, there was considerable discussion about the best places to pick, given the summer's dryness. Our initial goal was to pick first at Ranson-Edwards Open Space, then at Jewel Mountain Open Space, and finally at the Refuge. Ranson-Edwards was visited on August 10th when the plants were judged surprisingly healthy and seed production good, although flowering stalks were only about half as tall as last year and some forbs (golden aster) had bloomed early or had dried leaves but were still flowering (e.g., sunflower). There were a number of grass and forb species that looked to have good seed in two months. Several locations on the west side of the Refuge were visited on August 13th. All three sites were visited again on September 3rd. By that date, much of the seed on Ranson-Edwards¹ had dropped or been blown away, and a prairie dog

¹ There was considerable discussion with the manager of Ranson-Edwards about the appropriateness of picking seed in a dry year. JCNA's concern was that there be enough seed present to support an effective and rewarding pick, because we believe that seed ripens over a period of several weeks, we never pick anything close to all that is ripe on the one day we pick, and in a mature prairie, much of the seed has no room to germinate unless there is a disturbance and so lies dormant or blows away, so our seed picks do no harm—whether or not it is a dry year. The site manager was concerned that because it was a dry year, our picking would take seed that was needed to maintain the high quality prairie on the sites. As it turned out,

colony on Jewel Mountain had expanded so as to preclude picking near the east gate at least. Habitat on the east side of SH93 remained in good, though drier than usual, condition, and it was decided to have two picks on Rocky Mountain Arsenal National Wildlife Refuge and have the final pick on Section 16. Permission to pick on Section 16 was graciously granted by the District Manager for the Front Range District of the Colorado State Land Board. The location for the second Refuge pick was double checked on October 6, when everything, including seed heads, was covered with a quarter inch of ice from the hail the night before; although the seed heads looked okay, Porter's aster was still blooming so its seed might not be available in time. A specific pick site on Section 16 was selected on October 15th and verified on October 22nd. Most of the grasses and forbs at this site were short, but bearing seed.

The site evaluations included driving and walking through each potential picking site to search for areas where noxious weeds were at a minimum, where the diversity of native species was greatest, and where the seed crop was sufficient to make the effort of our volunteers worthwhile. Consideration was also given to the accessibility of each site for seed pickers, the ease of parking near the site, and the presence of a suitable spot for lunch. Because all our leaders are experienced, we no longer have a Crew Leader orientation the week prior to each scheduled pick. At all three sites, a Porta-Pottie was placed near the gathering and eating location. Porta-Potties were paid for by Xcel Energy, United Power, and Denver Water. They were typically put in place the afternoon prior to a pick and picked up soon after the pick ended.

On the day of each pick, Crew Leaders arrived about 30 minutes early to get organized and hear any comments about the site before the volunteers appeared. They helped park cars, welcome volunteers, and collect the waivers that all participants (or, if they were under 18, their parents) were required to sign to release JCNA from any liability for injury or other mishap. All of the volunteers who provided email addresses on their waivers were added to our email list to be notified of future picks. Typically about 10 minutes past the advertised gathering time, the group was welcomed, provided guidance on conduct and special opportunities at the site, and given instruction on what seeds to pick and how to pick them as well as what species to avoid. At the end of each pick, screening boxes were set up at the site, and volunteers rubbed the contents of their picking bags through the screen to break up the chaff and at least partially detach seeds from chaff. Volunteers then helped themselves to a lunch of sandwich materials, chips, fruit, cookies and water that was laid out and ready. It proved to be a very successful social time where all could converse and bond. Toward the end of the lunch period, an overview of the history of the Rocky Flats area, the reclamation process at the former plant site, and the uses to which the seeds just picked will be put was presented.

Details on each of the picks follow.

the paucity of seed on Ranson-Edwards made this discussion moot since there was insufficient seed at either site to support a productive pick in either case. We have invited the Ranson-Edwards site manager to join one of our picks to see first-hand how our picks affect the site.

Late September Pick—Rocky Flats National Wildlife Refuge

The late September pick was done in the northwestern portion of the Refuge. The pick was scheduled on September 22nd, 2012, between 8:30 am and 12:30 pm. Low rainfall during the 2012 growing season resulted in reduced vegetative growth and seed production for many species this year, although some species (e.g., mountain muhly) seemed to thrive under these conditions. Some of the forbs (e.g., Porter's aster) had an unusually variable growing season, with seed on individual plants in some areas ripening earlier, but later in other areas. In addition, some individual plants contained flowers that produced seed at different times, so some seed was ripe while some flowers were still blooming.

Crew Leaders for the September 22nd pick met at the west entrance gate to the Refuge at 8:00 am to place plants in bottles and label them for reference. Volunteers for the pick met at 8:30 am. All volunteers were led onto the Refuge as a group so the gate could be relocked behind them.

The pick was attended by 22 people, including 16 volunteer pickers. Of the volunteers who commented on how they heard about our picks, 4 heard about the opportunity from a friend or relative, and 5 responded to our advertising in the newspaper (2), in the Colorado Native Plant Society (CONPS) Newsletter (2), or in the Golden Newsletter (1).

Following their orientation, volunteers spread out across the large field to the south and east of the road that parallels Rock Creek and picked diligently for 3 hours. We picked about 5 lb of grass seed and 2 lb of forb seed, including associated chaff. We had fewer pickers and less seed than last year, but 2012 was not as productive a year. The major grass seed picked was from little bluestem, mountain muhly, big bluestem, with some from blue grama and switchgrass. Forb seed was not as prevalent this year; the major forb seeds picked were from golden aster and blazing star.

After lunch and the discussion of Rocky Flats history and the goals of the seed picking program, about half the group elected to drive a bit further north on the road that loops



through the Lindsey Ranch to explore the ecology and take photographs. We stopped northeast of the Ranch and overlooking the Rock Creek Valley for a discussion of the ecology illustrated in the valley--the thinning Rocky Flats alluvium toward the east, how

shrubs mark the boundary between the alluvium and the more impermeable layer beneath, and how the water draining down the slope forms *Juncus* and cattail wetlands. While a large herd of elk had been seen during the field trips to select and explore the site, the pickers were not lucky enough to see them. We also stopped to briefly explore the Lindsey Ranch before returning to the west gate.

Early October Pick—Rocky Flats National Wildlife Refuge

The October pick was also on the west side of Rocky Flats NWR, but was south of the entrance road off SH 93. The pick occurred on October 13th between 8:30 am and 12:30 pm. There were no specific target species for this pick. Rather, all native forb and grass species having ripe seed were targeted.

This pick was attended by 9 people, including 4 volunteers. This day was quite windy and cold and labeled plants were not set out in bottles for reference. By the time the group had gathered, we had about decided not to pick, but just to show the volunteers the site. However, once we got down into the valley, our hardy volunteers were willing to pick and so we put in a full three hours, picking 2 pounds of grass seed² (big and little bluestem, mountain muhly and side oats mostly) and 5 pounds of forb seed (especially blazing star but also golden aster and groundsel, plus some goldenrod). Grasses were a bit sparse but there were quite a few forbs.



Lunch at this site was down in the valley, as far out of the wind as we could get, since by the end, it was starting to sleet.

Late October Pick (switched to early November)—Section 16

The late October pick was scheduled for October 27th between 10:00 am and 2:00 pm. This pick was postponed one week because of snow and cold. The temperature forecast for Saturday, October 27th was for a low of 26 and a high of 45°F, and light snow on Friday, October 26th, so an email announcing the postponement went out on Friday morning.

The pick was held on November 3rd between 10:00 am and 2:00 pm. There were no



² All seed weights are for raw seed, which includes chaff and other miscellaneous plant parts that are picked with the seed.

specific target species for this pick. Rather, all native forb and grass species having ripe seed were targeted. We had about 15 pickers, including 10 volunteers, some of whom had volunteered previously (2) or were from Colorado School of Mines (3) or heard of our opportunity through work (1), the Arvada Press (1), or the internet (1). They picked 7 pounds of forb seed and 2 pounds of grass seed. The major forb species picked was blazing star, but many others were picked, including Porter's aster, goldenrod, tall buckwheat and golden aster. Grass seeds were more scarce, but we got a variety of big and little bluestem, mountain muhly, side oats grama, 3-awn, and blue grama. Given the postponement, we had a better turnout than expected and appreciated the flexibility of our volunteers, including especially the American Nuclear Society at the Colorado School of Mines, whose president worked hard to get a group of their members to attend as they had last year.

2. Seed Quantity.

The total quantity picked in 2012 was 14 pounds of raw forb seed and 9 pounds of raw grass seed, for a total of 23 pounds of seed given to Legacy Management. Raw seed includes other plant material attached to the seed; actual seed weights are smaller than the above figures. Forb and grass seeds are kept separate because the recipients sometimes plant seed in areas on which a broad-leaf herbicide will be used and therefore use only grass seed initially since the herbicide would kill any forbs planted.

3. Crew Leaders.

The Crew Leaders are key to the success of the project. They provide the expertise to identify the plants from which to pick seed, the weed species to avoid, and to help coordinate the volunteers as they pick. Crew Leader's interaction with the volunteer pickers during the picks are also key to building a sense of community and increasing the likelihood that volunteers will return to another pick.

The special training session provided shortly before the pick dates for Crew Leaders covered the following points:

- Safety concerns and medical awareness.
- Species identification for key grasses, forbs, and noxious weeds.
- Instructions on how to pick, use of gloves and tape etc.
- Importance of group interaction—providing ongoing camaraderie and help on species identification.
- Collection of waivers from all volunteers.

On the day of a pick, one Crew Leader is typically assigned to welcome volunteers, collect their waivers (completed previously or filled out on-site), and record their attendance. Another Crew Leader is assigned to assist with parking of vehicles, if needed. Again this year we did not try to assign volunteers to a specific Crew Leader, but rather identified the Crew Leaders as folks to go to with questions and then let social groups form, or not, in a natural way. Crew Leaders then circulated among the groups, engaging volunteers in

conversation, answering questions, providing encouragement, etc. This seems to be the best approach to maximizing the enjoyment of all personalities present.

Crew Leaders are vital in this effort and they are offered a small stipend. Only two Crew Leaders billed us for this work. Two of the others were given a \$50 gift card to a restaurant to show our appreciation.

4. Volunteers.

A number of avenues for procuring volunteers were explored, including flyers, email, newspaper and newsletter articles, posting on the Volunteer Outdoor Colorado website, a radio interview, and personal communications (phone or face-to-face). An announcement of the 2012 pick dates was sent out on March 27 to all news organizations and individuals on our email list. A full announcement of our plans was sent on August 20th and reminders for individual picks were sent out on September 17th, October 7th, and 23rd to our email list. In addition, an email regarding the postponement of the October 27th pick to November 3rd was sent to the list on October 25th.

Attached to the August 20th email were the following handouts: a description of the Xeric Tallgrass Prairie at Rocky Flats, a list of major prairie species on/near Rocky Flats and the current version of a color flyer with details about our events. These handouts were similar to those presented in the 2009 report. These same materials were used to advertise the picks in a variety of other ways.

Contacts included the following:

- Posting the JCNA seed picking opportunities on the Volunteers for Outdoor Colorado website; it was also posted on YourHub.com, but either the posting was flawed or it has since disappeared.
- Contacts with local Boy Scouts and Cub Scouts through emails to their leaders.
- Contact with the Denver Area Girl Scout Council and Girl Scouts of Colorado through emails to their leaders.
- Contacts with churches (Saint Joan Catholic, Arvada United Methodist, Church of Jesus Christ of Latter Day Saints, Shrine of St. Anne Church, Ward Road Baptist Church, Arvada Covenant Church, Peace Lutheran Church, Applewood Baptist Church), by having them on our email list. Note that the Christ Community Covenant Church contact asked to be taken off our mailing list this year.
- Publication in the Great 8 Newspapers (Mile High News—Arvada Press, Lakewood Sentinel, Golden Transcript, Wheat Ridge Transcript and Metro North News—Northglenn-Thornton Sentinel, Westminster Window, Thornton Frontier, and Westsider) on several dates online and in the print edition in the Calendar, the Events Section, in the County Briefs, starting soon after the August 20th emails were sent to the news organizations and continuing through November 1st.
- A lovely article in the September 27, 2012 edition of the Arvada Press, prepared by a staff reporter and photographer who attended our September 22 pick, helped publicize our two later picks.
- Publication in the Colorado Native Plant Society News on September 19th

- Listing in the Golden Newsletter throughout the picking season from August 26th through October 28th.
- Distribution via nature-net@yahoo.com on October 8th.
- Contact with several cities (City of Arvada's PeaceJam; City of Westminster; City of Broomfield); a number of organizations (The Nature Conservancy, Majestic Park Nature Center, Colorado Department of Public Health and Environment, Colorado Native Plant Societies--Boulder and Denver Chapters, Colorado Natural Heritage Program, Sand Creek Greenway, members of Friends of the Front Range Wildlife Refuges, Colorado Mycological Society and other botanical societies, Boulder County Nature Association, Colorado Natural Heritage Program); the American Nuclear Society (Colorado School of Mines) and several National Honor Societies (Ralston Valley High School, Standley Lake High School, Pomona High School) via our growing email list.
- Posting of flyers in: Standley Lake Library, Arvada Library, Broomfield Library, Golden Library, Majestic Park Nature Center, Colorado School of Mines (CSM) Library (3 bulletin boards) and dormitory bulletin boards, Jeffco Open Space, CSM Environmental Science Department., Golden Recreation Center, and Colorado Mountaineering Center.
- Overview of the JCNA seed picking program in a 23 November 23rd interview of Paul Kilburn and Jean Tate by Roger Wendell, Host of the KGNU Friday morning program, Connections. The station's broadcasting studio is on Walnut Street in Boulder.

The success of these contact avenues in providing volunteers varied. We will continue to add new contacts and sources for volunteer pickers in the future, with the above list forming our starting point for next year. The publications and key contact messages are shown in Appendix 1.

5. Seed Germination Testing

Germination tests for the major forbs and grasses occupying the upland habitats at Rocky Flats were carried out for JCNA under contract with the Colorado Seed Laboratory at Colorado State University. Tests were run for seed from 2011 (a wet year) and 2012 (a dry year). Table one provides the results of the Seed Laboratory testing and allows comparison of the two years.

The laboratory uses a special step to prepare for native grass seed germination. The seed is first cleaned to eliminate all but the lemma, palea and seed within the hand-picked seed material. Many of the hand-picked seeds have not developed fully and only some of them are firm and good for the germination testing. This is called "pure seed" and is used to determine germination percentages. For example the figures for big bluestem in 2011 show that while 81 percent of the pure seed was viable, only 14 percent of the flowers formed pure seed, so that the overall germination figure is 81 x 14 or 11.34 percent. Thus, for big bluestem, only slightly over 1/10th of the seed picked in 2011 germinated. Most of the other grass species show similar percentages of viability and development of pure seed (Table 1).

The comparison of 2011 to 2012 percentages in Table 1 shows that the results were better in the wet year (2011) than the dry year (2012). The pure seed percentages for three of the four species tested in both years (big bluestem, little bluestem, mtn muhly) are lower in 2012 than in 2011. Only side oats grama has the same percentage of pure seed (14%) in both years. The viable percent figures for all four are also higher for 2011. It appears from these results that low rainfall years result in less pure seed and also in lower germination of these four native grasses.

For the forb seeds the initial cleaning step was not necessary and pure seed was used to obtain the germination figures. The germination percent for the 2011 seed ranged from 33 to 45 percent. Most of the results for 2012 were even higher, even though the year was much drier.

In summary, grass species germination was generally low owing to the fact that most grass flowers do not develop sound seed. In contrast, forb seed has much higher germination rates. JCNA will continue to obtain germination results for both grasses and forbs in future years and compare these results with precipitation.

Table 1				
Colorado Seed Lab Germination Results				
	2011		2012	
<u>Grasses</u>	Pure Seed	Viable %	Pure Seed	Viable %
Big Bluestem-- <i>Andropogon gerardii</i>	14	81	<1	x
Little Bluestem-- <i>Schizachyrium scoparium</i>	12	57	4	48
Side Oats Grama-- <i>Bouteloua curtipendula</i>	14	81	14	43
Three Awned Grass-- <i>Aristida purpurea</i>	x	x	84	70
Blue Grama Grass-- <i>Chondrosum spp.</i>	1	83	x	x
June Grass-- <i>Koeleria macrantha</i>	x	x	31	16
Mountain Muhly-- <i>Muhlenbergia montana</i>	11	59	<1	27
<u>Forbs</u>				
Porter's Aster-- <i>Aster porteri</i>		33		34
Golden Aster-- <i>Heterotheca spp</i>		45		77
Blazing Star-- <i>Liatris punctata</i>		35		61
Fall Senecio-- <i>Senecio spartioides</i>		x		28
Low Buckwheat-- <i>Eriogonum umbellatum</i>		x		9
False Tarragon-- <i>Oligosporus dracunculus</i>		x		76
Figures are percentages; x = Species not sampled				

In addition to the Colorado Seed Laboratory testing, JCNA again conducted an outdoor planting trial in our outdoor garden using one species of grass (three awn) and five forb species (small buckwheat, native sunflower, porter's aster, gum weed and tall buckwheat). Seeds were planted in early spring of 2012 and were mainly unsuccessful. Only tall

buckwheat came up in any abundance and these plants will be left to overwinter and flower next year. JCNA will repeat this garden planting in 2013 using more species.

B. PROGRAM CHANGES RELATIVE TO PREVIOUS YEARS

In the 2009, 2010, and 2011 reports on seed picking, a number of recommendations for future efforts were made. These are shown in italics below followed by a summary of how these recommendations were implemented in 2012.

- *Start contacts early.*
Continue contacts with repeated reminders.
All 2012 picks were in the fall. Therefore, by announcing the pick dates in March, potential volunteers were notified 6 months in advance of the first pick. An effort was made in 2012 to inform, but not intrude excessively. Therefore, the full details for all picks were sent out one month before the first pick and a single reminder was sent out about a week before each fall pick date. The reminders included encouragement to join us, date and time, and directions to the pick site; only the waiver was attached (see Appendix 1). This resulted in five emails being sent about the pick during the year. This schedule was mentioned in the March email, so recipients would know what to expect. In addition to the emails scheduled in 2012, an additional email was sent out to postpone the final pick from October 27th to November 3rd.
- *Continued cultivation of high school Honor Society students is most worthwhile, partly to raise their environmental awareness. All of these students are required to do volunteer work and a better response is anticipated in the future.*
Coordination with sponsors will continue.
Contact with all of the high school National Honor Societies (NHS) continued via email and our email list was updated when we learned of a change in NHS leadership. Pomona NHS remained in contact with us, but was unfortunately unable to attend our 2012 picks due to schedule conflicts.

In addition, the American Nuclear Society from Colorado School of Mines has sent a group to help with our picks during both 2011 and 2012. These students are particularly interested in joining our activity, which is associated with their nuclear science curriculum because of Rocky Flats' history, yet much different from their usual endeavors on campus.

- *Half day picks are productive and more popular than full days. A more realistic time seems to be 8:30-12:30, followed by lunch.*
The scheduling of the first two picks between 8:30 am and 12:30 pm and the final pick between 10:00 am and 2:00 pm to avoid the early morning cold was continued in 2012. However, some confusion resulted from scheduling the final pick at a later time, and we decided to schedule all picks in 2013 at the same time: 8:30 to 12:30.
- *Follow up on new volunteer sources including the following:*
 - *City or County programs that require minor offenders to perform Community Service*
 - *Publication of ads in local newspapers*

In 2012 we continued to contact leaders of the Peace Jam program, but we again had no participation from participants in that program. We will leave the PeaceJam leaders on our email list, but not engage with them otherwise, unless they initiate contact with us.

We were successful in placing ads in several newspapers, and greatly appreciated the article that was written about our picks (Appendix 1). The newspaper articles and calendar postings were effective in soliciting several volunteers to help us pick.

- *Continue to seek volunteers through the Volunteers for Outdoor Colorado web site (assuming it remains free or adds only a nominal charge), and all contacts made during 2009, 2010, and 2011.*

We continue to get a few volunteers from the web site. It also continues to serve as a valuable tool for contacting all registrants, for making all information available, and providing a printable list of expected attendees.

- *Additional contacts for seed picks include the following:*
 - *Publication of an ad or a story in the Boulder Camera*
 - *Get lists of contacts for high school science clubs*
 - *Contact Master Gardener's program*
 - *Contact Colorado State University to include our picks in their list of approved volunteer activities*
 - *Contact city and county agencies that have community service programs*
 - *List our events on additional web sites, including the AARP Create the Good volunteer opportunity website, and Nature Net*
 - *Contact additional environmental organizations, including local Audubon groups, Colorado Environmental Coalition, Colorado Renewable Energy Societies, Colorado Wildlife Heritage Foundation, and Rocky Mountain Nature Association*

Again in 2012 we posted the dates for some of our picks on Nature Net. We also added contacts to our email list from Jefferson County 4H and Arvada Gardeners. We will continue to pursue the remaining potential contacts in 2013.

- *Ask WRV to post our picking dates on their calendar and contact RMA Volunteers (through Sherry James, USFWS) and Friends of the Front Range Wildlife Refuges*
The members of Friends of the Front Range Wildlife Refuges who are on our mailing list will continue to be contacted. We have some WRV members on our mailing list, but they seem to be uninterested in posting our seed pick dates, since that might draw volunteers away from their picks. Given the strong association of RMA Volunteers with Rocky Mountain Arsenal National Wildlife Refuge, we will not try to draw them to Rocky Flats.
- *As part of the initial orientation at a pick, make a bigger point of the philosophy to take only memories and photos (and seed); leave only footprints.*
This is a message we will continue to weave into the orientation. One interesting creature we saw during two picks in 2012 was a wingless Lubber Grasshopper. We also saw evidence of the elk we had seen on our August 13th site survey, though we didn't see the elk themselves during a pick.



- *Keep an eye on how well pickers are focused on their task and when they seem to be getting tired and wandering off task, stop the day's pick and serve lunch. We paid attention to whether pickers became tired or bored this year, but the 2012 volunteers were especially enthusiastic, and continued to pick for a full 3 hours until we announced that they should start working their way back toward the lunch tables.*
- *Explore how to better handle large groups, especially when they contain a high percentage of youths. Problems encountered included the following:*
 - *Disappearance of disproportionate quantities of drink and food before all were served once, in fact before others had even returned from picking. Solution: Don't leave food and drink unattended and be more assertive in explaining expectations.*
 - *Picking of entirely wrong items such as large bags of mullein. Solution: Be more specific about what not to pick, and also look carefully in the bags before they are added to the group take (this prevented the mullein seed from being mixed in this year).*
 - *Insufficient instilling of "good plant"/"bad plant" mental images, left many unsure of what to pick. Solution: Perhaps break pickers into smaller groups after the initial health/safety/general protocol discussion, and have pre-picked samples to show everyone in the smaller group, then perhaps keep the groups together for a while until all are sure they have the right target plant(s) in mind.*

In 2012, we had no large groups participating in our picks, but we continued to keep all the food inside the vehicles except for water, which was available in the

bed of the flatbed truck. To ensure more consistent picking of desired species, we have had more extensive discussions with those who are bringing groups, although no problems arose this year; the several youths participating worked hard at picking the right species. To better instill mental images of what to pick, we set up a table with identified plants stuck into sand filled bottles and aggregated into “good plant” and “bad plant” groups. Volunteers looked at the plants while the group was gathering and again before heading into the field to pick. The only problem with this method was that it is susceptible to wind knocking the bottles over and blowing the identification placards away. We taped the placards to the table in 2012, and on one of the picks did not even set the bottles out due to the strong wind.

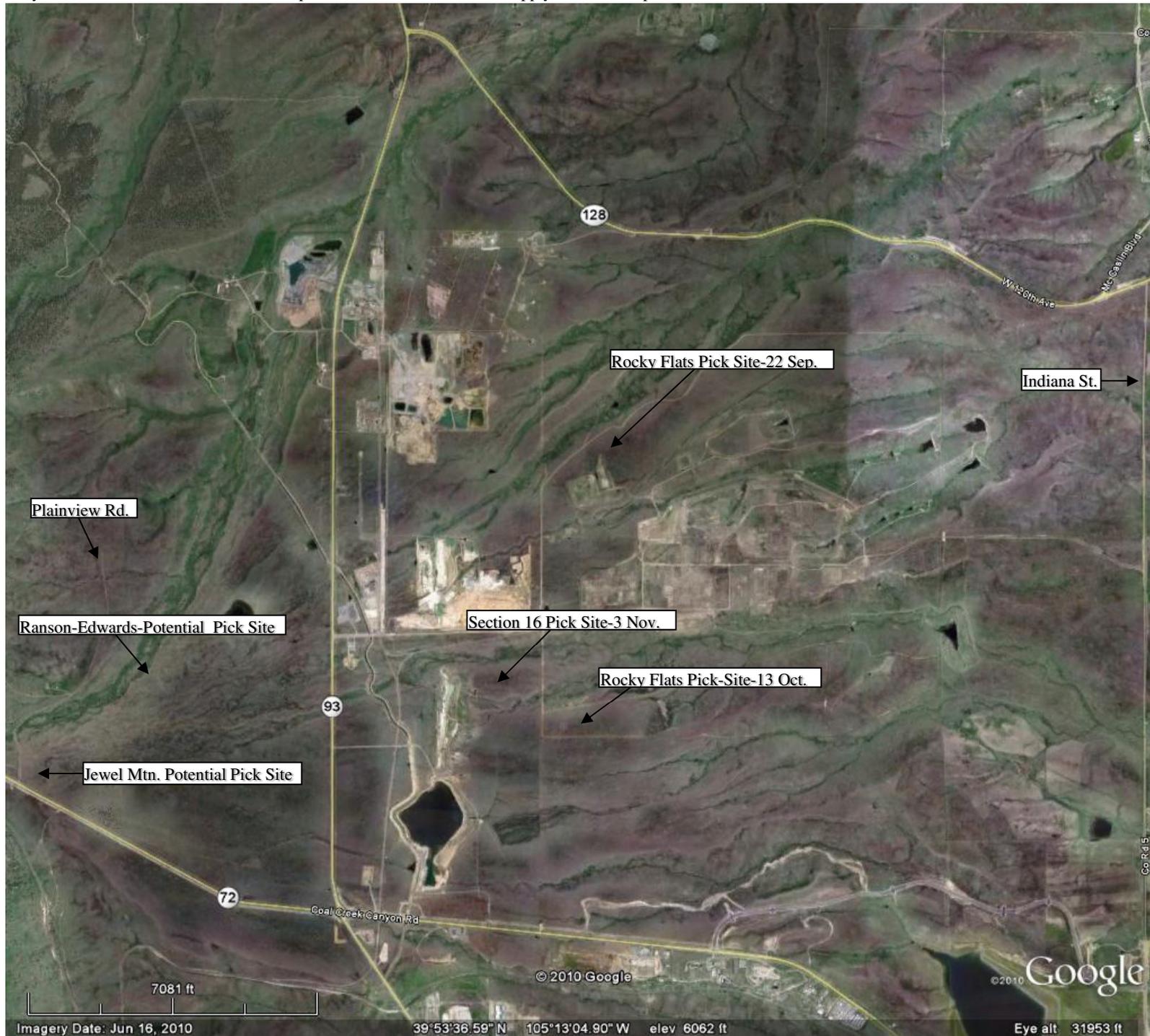
- *Continue to expand our list of contacts, including the potential contacts identified in 2009, 2010, and 2011, but not contacted in 2012.*

The email list used to contact potential pickers has grown to over 426 names after 40 email addresses having fatal flaws and 8 addresses asking to be deleted (because they have moved or were not interested) were removed. After every pick, those who list their email address on the waiver are added to the list for future mailings. On January 15th we sent out an announcement of the pick dates for 2013. Included in that email was a summary of our picking success in 2012 and discussion, photos, and a URL link to further information on how our seeds are used on Rocky Flats.

C. RECOMMENDATIONS FOR FUTURE EFFORTS

The picking effort in 2012 ran smoothly. JCNA will continue to implement the suggestions above and strive toward contacting more potential volunteers. Our approach will continue to be two pronged, in that we will strive to build relationships with those who can enthusiastically “spread the word” about our seed picks to groups with which they are involved, and we will also make information about our seed picks widely available via email, on bulletin boards, and in publications so that people who may be interested will be informed. To date, the greatest number of our volunteers has responded to emails, newspaper articles, flyers, and information from a friend or relative and these are the publicity avenues we will pursue since most of our volunteers have chosen to come on their own initiative after learning of the opportunity, or have been encouraged to come because of personal invitation from someone they already know. In addition, we have been invited to post our events on the KGNU Dot Org feature in later summer, and plan to do so.

Map 1.
2012 Pick
Locations



Appendix 1 Avenues Used to Seek Volunteers

Arvada Press Article

8 Arvada Press

Seeds to help revitalize Rocky Flats

*Volunteers pick native seeds
to plant on old industrial site
as grounds evolve*

By Sara Van Cleve
svancleve@ourcoloradonews.com

Rocky Flats has been under an environmental clean-up for more than a decade now.

While the Department of Energy continues ongoing work at the former nuclear plant location, now known as the Rocky Flats National Wildlife Refuge, the Jefferson County Nature Association is helping revive the natural setting of the area.

JCNA hosted its first of three annual seed pickings Sept. 22 at Rocky Flats. A group of about 20 volunteers



Emily Mix documents various species of seeds she collects during a seed harvest by the Jefferson County Nature Association Saturday at the Rocky Flats National Wildlife Refuge.



Twine is used to tie around bags containing seeds during a Jefferson County Nature Association seed harvest Saturday at the Rocky Flats National Wildlife Refuge.

met on the Rocky Flats grounds to collect seeds from grasses and forbs, or anything that isn't a grass, that will be planted in different areas of the refuge.

"We want to put it back the way it was," said JCNA President Paul Kilburn. "You can't buy the special seeds that grow here. You can't buy the genetic strands that grow here. We're happy to be at Rocky Flats to help restore it with native seed."

While seeds of the different grasses, such as panic grass and big bluegrass, can be purchased, only seeds from the grasses already growing on the property are adapted for the specific climate that the area sees, Kilburn said.

The last building of the old Rocky Flats plant was removed in December 2005, Stew Podolski, a picking volunteer and crew member of the Rocky Flats cleanup, said. The refuge was officially established in 2007.

"It's great," Podolski said about the use of the land as a wildlife refuge. "The industrial area was like a small city, so when you tear that all down, you have a bunch of open ground."

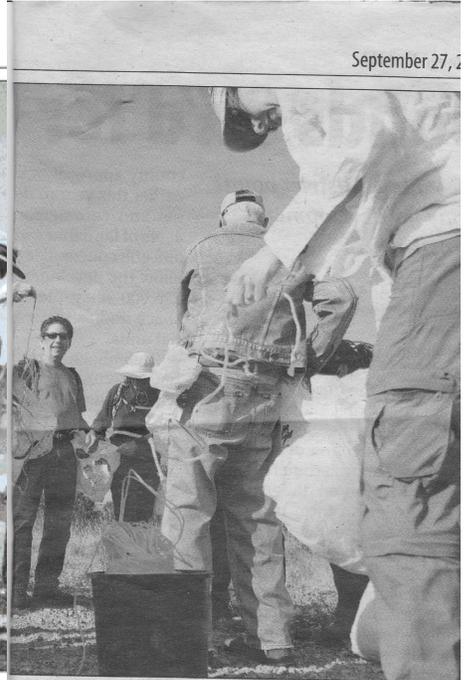
Once the volunteers tied their bags to their belts and were showed which seeds to pick and how to pick them, they set out to collect as many seeds as possible on the sunny Saturday morning.

"I'm an outdoors person, so I'm interested in the development of the refuge," said volunteer Joan Berry. "The picks a great opportunity to do something for our community; it's a good cause and it gets you outdoors."

JCNA has been hosting seed picks at Rocky Flats for four years.

Legacy Management, a division of the Department

September 27, 2007



Nature Association seed harvest Saturday at the Rocky Flats National Wildlife Refuge.



Patrick Murphy, president and plant ecologist of Ecotone Corporation, instructs what species of plants to collect and not to collect during a Jefferson County Nature Association seed harvest Saturday at the Rocky Flats National Wildlife Refuge. Photos by Andy Carpenean

of Energy, will most likely plant the seeds picked by the volunteers throughout the refuge this fall so the seeds can benefit from the snow and rain in the coming months, Kilburn said.

The next two picks will be 8:30 a.m. to 12:30 p.m. Saturday, Oct. 13, and 10 a.m. to 2 p.m. Saturday, Oct. 27, at Rocky Flats.

To register for the picks, visit www.volunteeroutdoors.net and search "Jefferson County Nature Association" under the "Volunteers" tab.

For more information, contact Paul Kilburn at pdkilburn@msn.com or Jean Tate at djt_co@yahoo.com.

Sample Arvada Press Posting

SATURDAY/NOV. 3

SEED PICKING Volunteers are needed for picks of native prairie seeds used to re-vegetate Rocky Flats, about halfway between Golden and Boulder on Highway 93. The picks are from 8:30 a.m. to 12:30 p.m. Saturday, Nov. 3 (postponed from Oct. 27 because of weather). Crew leaders will give training on identification of native species, show how to pick seeds and what weeds to avoid. A great chance to learn about the ecology of the native prairie in a beautiful setting. Get information and register at <http://tinyurl.com/SeedPick>. For directions to the pick site, email Jean at djt_co@yahoo.com.

Sample Golden Newsletter Posting

SEPTEMBER

Sep 22: Seed picking
Sep 22: GHM: "Communicating in early 1900s"
Sep 27: Congressional Dist. 7 candidates forum in Arvada
Sep 29: Last Golden Farmers Market
Sep 29: GHS: "Demon Dash" 5K & fun run
Sep 30: Deadline for October trip to Mexico

OCTOBER

Oct 2: GHM: "Memories and Me"
Oct 5 & 6: Golden Solar Home Tour events
Oct 7: Golden Gallop
Oct 10: Mayor's Awards & State of City
Oct 13: Seed picking
Oct 13: DR: Girl Scout "Rocks & Roles"
Oct 13: GHM: Black & White Night: Historic photos
Oct 14: RQM: "Playing with Dolls"
Oct 16: GHM: "Golden through the Decades"
Oct 20: GHM: Cemetery tours
Oct 21: JSO: "Afternoon at the Opera"
Oct 27: Seed picking

SEED PICKING

After waiting through a long hot summer of ripening seeds....Jefferson County Nature Association is again ready to pick seeds! We hope you are too, and that you are anxious to volunteer to help on one or more of our three picks (**September 22 or October 13**-8:30-12:30; October 27-10:00-2:00). This is a great chance to learn about the ecology of native prairie in a beautiful setting where crew leaders will give a brief training on identification of native species, show how to pick seeds, and what weeds to avoid. The collected native seed will be used to enhance the diversity of local native species on Rocky Flats areas reclaimed by the Department of Energy. All three picks will be in the vicinity of Rocky Flats (near the intersection of SH 72 and SH 93, NW of Denver) and two of the picks will likely be on the west side of Rocky Flats National Wildlife Refuge. So we'll bring enough free lunch for you, please register by the Thursday before each pick at <http://tinyurl.com/SeedPick>, where you can see more details once you sign into the site. This will also give us your email so we can contact you with directions to the pick site and last minute changes. Please contact us to make special arrangements if your group is large or you are bringing kids younger than 12 years

old. Adults must sign a waiver at the site. Those under 18 must bring a waiver signed by a parent. If you have questions or have trouble registering online email Jean at djt_co@yahoo.com or Paul at pdkilburn@msn.com.

Sample CONPS News Posting

VOLUNTEERS FOR JEFFERSON COUNTY NATURE ASSOCIATION SEED PICKING FOR ROCKY FLATS

Information can be found at:

http://www.volunteeroutdoors.net/index.cfm?fuseaction=Opportunities.View&Opportunity_ID=3496

Online at OurColoradoNews.com -- Article
September 27th 2012

Seeds to help revitalize Rocky Flats

Photo by Andy Carpenean

Emily Mix documents various species of seeds she collects during a seed harvest by the Jefferson County Nature Association Saturday at the Rocky Flats National Wildlife Refuge.



am | Updated: 7:44 am, Thu Sep 27, 2012.

Sara Van Cleve | [0 comments](#)

Rocky Flats has been under an environmental cleanup for more than a decade now.

While the Department of Energy continues ongoing work at the former nuclear plant location, now known as the Rocky Flats National Wildlife Refuge, the Jefferson County Nature Association is helping revive the natural setting of the area.

JCNA hosted its first of three annual seed pickings Sept. 22 at Rocky Flats. A group of about 20 volunteers met on the Rocky Flats grounds to collect seeds from grasses and forbs, or anything that isn't a grass, that will be planted in different areas of the refuge.

"We want to put it back to the way it was," said JCNA President Paul Kilburn. "You can't buy the special seeds that grow here. You can't buy the genetic strands that grow here. We're happy to be at Rocky Flats to help restore it with native seed."

While seeds of the different grasses, such as panic grass and big bluegrass, can be purchased, only seeds from the grasses already growing on the property are adapted for the specific climate that the area sees, Kilburn said.

The last building of the old Rocky Flats plant was removed in December 2005, Stew Podolski, a picking volunteer and crew member of the Rocky Flats cleanup, said. The refuge was officially established in 2007. "It's great," Podolski said about the use of the land as a wildlife refuge. "The industrial area was like a small city, so when you tear that all down, you have a bunch of open ground."

Once the volunteers tied their bags to their belts and were showed which seeds to pick and how to pick them, they set out to collect as many seeds as possible on the sunny Saturday morning.

"I'm an outdoors person, so I'm interested in the development of the refuge," said volunteer Joan Berry. "The picks a great opportunity to do something for our community; it's a good cause and it gets you outdoors."

JCNA has been hosting seed picks at Rocky Flats for four years.

Legacy Management, a division of the Department of Energy, will most likely plant the seeds picked by the volunteers throughout the refuge this fall so the seeds can benefit from the snow and rain in the coming months, Kilburn said.

The next two picks will be 8:30 a.m. to 12:30 p.m. Saturday, Oct. 13, and 10 a.m. to 2 p.m. Saturday, Oct. 27, at Rocky Flats.

To register for the picks, visit www.volunteeroutdoors.net and search "Jefferson County Nature Association" under the "Volunteers" tab.

For more information, contact Paul Kilburn at pdkilburn@msn.com or Jean Tate at djt_co@yahoo.com.

Online at OurColoradoNews.com – Things to Do – September 15 through November 3

SEPT. 24 THROUGH NOV. 12

Seed Picking for Rocky Flats — Volunteer to pick local native grass and forb seeds to enhance Rocky Flats! Jefferson County Nature Association's 2011 volunteer seed picking efforts are scheduled in the Rocky Flats area between Golden and Boulder along SH93. Scheduled times are 8:30 a.m. to 12:30 p.m., Sept. 24 and Oct. 22 and 10 a.m. to 2 p.m. Nov. 12. Check the website or contact Jean Tate for picking locations, as they will be different for each pick. JCNA will provide lunch to all those who let us know they are coming by the Thursday prior to each pick. Please contact us to make special arrangements if your group is large or you are bringing kids younger than 12 years old. Adults must sign a waiver at the site. Those under 18 must bring a waiver signed by a parent. Check the web site for more information at <http://tinyurl.com/SeedPick> or contact Jean Tate at djt_co@yahoo.com.

Nature-Net Email

Pat Murphy, our key Crew Leader, has been very thoughtful in forwarding emailed information about our event to Nature-Net@yahoogroups.com

2012 Communications with Email List

8/20/2012 Email

All,

Here is hoping you have had a wonderful summer and are ready to help us harvest native Rocky Flats seed. We plan to pick at Rocky Flats NWR on 22 September and 27 October. The September pick will be north of the entry road and near the lovely Rock Creek valley and Lindsey ranch. The October pick will be south of the entry road in an area that will be new to most of you, and where we planned to pick in November, 2011 when the strong wind blew the seed and our trip away. The location of our third pick, on 13 October, will be at Jefferson County's Ranson-Edwards Open Space, City of Boulder's Jewell Mountain Open Space, or elsewhere, depending on site conditions. As always, please sign in, then pre-register at <http://tinyurl.com/SeedPick> so we know you're coming and how much lunch to bring.

In fact, as usual, all of our specific site locations could change, depending on how the summer heat and moisture have affected the specific locations we hope to use. We'll send you the final site location and directions about a week before each pick, so be sure to look for that email and put my phone numbers (below) on your calendar so you can call me the day before the pick to double check the location if you're unsure. Wherever we go, it will be in the vicinity of Rocky Flats, so final directions will just fine tune the spot.

I'm really looking forward to breathing some crisp fall air in the lovely fields along the Front Range and renewing friendships from years past, as well as making new friends. Please spread the word among your friends as well, so we'll have a hearty crowd of pickers on each date.

See you soon!

Jean

P.S. In case you have misplaced the waiver, flyer and other information over the summer, I have reattached it to this email. Please remember that waivers for those under 18 must be signed by a parent.

D. Jean Tate, Ph.D.
Enviro-Support, Inc.
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jeantate@enviro-support.com
jeantate@enviro-support.com

9/17/2012 Email

From: jeantate@enviro-support.com

Sent: Monday, September 17, 2012 4:58 PM

To: jeantate@enviro-support.com

Subject: JCNA Seed Pick This Saturday!--Group 3

Hi,

A quick reminder that our first Jefferson County Nature Association seed pick will be next Saturday, September 22. Our first pick will be on the west side of Rocky Flats NWR. We hope to see you there at 8:30 am (see directions below). Please sign in then register at <http://tinyurl.com/SeedPick> by Thursday night so we know you are coming. Also check your email Friday evening at about 9 pm to see if there are any last minute changes. The waiver is attached for your convenience (bring it with a parent's signature if you are under 18, please). Hope to see you Saturday!!

Directions to Seed Picking on Rocky Flats National Wildlife Refuge

Enter the west side of Rocky Flats National Wildlife Refuge via the old Rocky Flats Plant entrance road that is north of SH 72 and runs east off SH 93

- Reach the intersection of SH 93 and SH 72 (a stop light) by taking SH 93 north from Golden or SH 72 north then west from Arvada.
- From the intersection go north on SH 93 nearly 1.4 miles to the next stop light at the old west entrance road to Rocky Flats. Go east on the entrance road for about a mile to a locked gate where we will meet you with a smile.
- We'll pass through this gate as a group and lock it behind us, parking some cars along the side of the entrance road near the gate and car pooling beyond the gate to minimize the number of cars inside the refuge.

Jean

jeantate@enviro-support.com

10/7/2012 Email

Hi,

The pick on September 22 went off without a hitch. We had about 25 attendees (16 volunteers, 5 crew leaders, 2 Arvada Press staff and, importantly, 2 lunch servers) at our September 22 pick. Together we picked about 5 lb of grass seed and 2 lb of forb seed. We had fewer pickers and less seed than last year, but it is not as productive a year. Nonetheless, we all worked hard and had a great time in a most scenic part of the Front Range. The major grasses picked were little bluestem, mountain muhly, big bluestem, some blue grama and switchgrass; the major forbs were golden aster and blazing star. We visited the Lindsey Ranch, and found a huge plains lubber grasshopper (photo attached). A hearty thanks to each of you who helped us!! I hope you all saw the

lovely Arvada Press article (attached) written by Sara with photos by Andy and that it inspired you to come out and pick....

Our next pick, on October 13, will be south of the west entrance road to Rocky Flats NWR, which promises to be a good area. Porter's aster is abundant, and if ripe, should provide a lot of forb seed. This is the part of the Refuge where we intended to go last year when it was so windy and a spot folks don't often get to see. We hope to see you there at 8:30 am (see directions below). Please sign in then register at <http://tinyurl.com/SeedPick2012> by Thursday night so we know you are coming (NOTE the revised URL, which will take you to the correct 2012 page!). Also check your email Friday evening at about 9 pm to see if there are any last minute changes. The waiver is attached for your convenience (bring it with a parent's signature if you are under 18, please). Hope to see you Saturday!!

Directions to Seed Picking on Rocky Flats National Wildlife Refuge

- Enter the west side of Rocky Flats National Wildlife Refuge via the old Rocky Flats Plant entrance road that is north of SH 72 and runs east off SH 93
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Jean

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jeantate@enviro-support.com

10/23/2012 Email

Hi,

Our pick on October 13 netted us about 2 lbs of grass and 5 lbs of forb seed, gathered by about 10 pickers, who blew the rain south to Arvada and persevered through a few sprinkles. We gathered mostly big and little bluestem, mountain muhly and side oats grama grass seed and especially blazing star but also golden aster, groundsel and goldenrod forb seed. Thanks so much to all who participated!

Our final pick is scheduled for October 27 at 10 am to 2 pm (note the time is later than usual...), when we will pick in Section 16, the State Land Board section that is adjacent

to the Rocky Flats NWR and the subject of much discussion during W470 debates. We have chosen quite a pretty spot that should be out of the wind and away from traffic (see directions below). Please sign in then register at <http://tinyurl.com/SeedPick2012> by Thursday night so we know you are coming (NOTE the revised URL, which will take you to the correct 2012 page!). The waiver is attached for your convenience (bring it with a parent's signature if you are under 18, please). Hope to see you Saturday!!

Directions to Seed Picking on Section 16:

- Reach the intersection of SH 93 and SH 72 (a stop light) by taking SH 93 north from Golden or SH 72 north then west from Arvada.
- From the intersection go north on SH 93 about .9 miles to a small dirt road that runs east about 50 feet to a gate where we will meet you. (This is about half a mile south of the old Rocky Flats Plant entrance road where you have turned east at the stop light for the two previous picks)

A couple of IMPORTANT things to note:

- Be sure to check your email Friday morning to see if there are any last minute changes (given the cold front forecast to arrive at the end of the week, this could happen...!). If the pick were postponed to the following week and you plan to pick please let me know if you could come then instead of this weekend....
- Because we'll pick toward the east side of the section behind a locked gate, leaving early won't be easy, though leaving at 1:00 when we let the folks through the gate with the food would work well (though you'd miss lunch and a chance to chat and relax with your fellow pickers)
- These late picks focus more on forbs, so you may find scissors and gloves especially useful to avoid their prickles and the cold (leather or rubberized gloves that won't collect seeds in their fabric are best)

This is our last chance to explore the Rocky Flats vicinity until next fall, so do try to join us!!!!

Jean

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jeantate@enviro-support.com

10/26/2012 Email

Hi,

The long range forecast for next week shows a low of 38oF on Friday night and a high of 54 on Saturday, which should be a bit better than this weekend...

Therefore, the JCNA SEED PICK IS POSTPONED TO NEXT WEEKEND, 3 November at 10:00 am. All other details remain the same. Please just email me by Thursday night if you are able to come and let me know how many will be in your party.

Just to remind you:

- Directions to Seed Picking on Section 16:
 - Reach the intersection of SH 93 and SH 72 (a stop light) by taking SH 93 north from Golden or SH 72 north then west from Arvada.
 - From the intersection go north on SH 93 about .9 miles to a small dirt road that runs east about 50 feet to a gate where we will meet you. (This is about half a mile south of the old Rocky Flats Plant entrance road where you have turned east at the stop light for the two previous picks)

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