

The Watershed Leader as a Catalyst for Change

Joseph E. Bonnell¹, Dallas Z. Hettinger², *Anne M. Baird¹

¹*School of Environment and Natural Resources, The Ohio State University, Columbus, OH*

²*Specialty Chemical Industry, Belpre, Ohio*

**Corresponding Author*

Abstract: This paper describes a research project that collected information about the leadership characteristics of successful watershed coordinators in Ohio. We interviewed a total of twenty watershed coordinators who had successfully completed nonpoint source (NPS) management projects and asked them to discuss their perceptions of what made them and others like them successful. We organized the attributes identified into three themes (social, technical and administrative). Of these, social attributes like strong communication skills were considered to be the most critical for getting NPS projects completed, though technical and administrative attributes were also important. We discuss how these findings might be applied in evaluating and training watershed coordinators, and consider possible avenues for further research.

Keywords: *watershed training, core competencies, nonpoint source (NPS) management, watershed leadership, collaborative watershed management*

In 2013, the Ohio Environmental Protection Agency (OEPA) approached Ohio State University Extension (OSU Extension) about conducting a research project. They wanted to better understand why some watershed coordinators had been more effective than others at implementing nonpoint source pollution management projects (NPS projects) that grew out of collaborative watershed plans. In particular, OEPA staff wanted to know if there were certain characteristics or approaches that effective coordinators had in common so that OSU Extension and other educational institutions could create professional development programs to increase the capacity of less successful watershed coordinators.

At that time, Ohio was fertile ground for an inquiry into the role of watershed coordinators in watershed plan implementation. Approximately 13 years earlier, the Ohio state legislature had approved funding for a new collaborative initiative involving OEPA, the Ohio Department of Natural Resources (ODNR) and OSU Extension. The goal was to support existing and facilitate new watershed management projects and programs at the local level. ODNR created a grant program

to provide funding to watershed groups and local governmental agencies to hire full-time watershed coordinators. These new coordinators would oversee development and implementation of watershed management plans to address sources of NPS pollution. Recipients of grant funds were required to demonstrate how they would engage key stakeholders in both planning and implementation. This grant program created new watershed coordinator and related positions at a variety of agencies and organizations in Ohio. Twelve years after the initial watershed coordinator grants were awarded, many watershed plans had been developed and endorsed by OEPA and ODNR and were being implemented.

Effective Watershed Leadership

Collaborative watershed management is promoted and supported by many state and federal agencies as an effective strategy for addressing nonpoint sources of surface water pollution (National Research Council 1999; Leach and Pelkey 2001; Sabatier, Focht et al. 2005). Effective collaborative watershed management involves:

- Engaging key stakeholders in defining problems and negotiating solutions, leading to greater buy-in and higher levels of implementation (Sabatier, Focht et al. 2005; Morton 2011).
- Building social capital,¹ in particular by expanding and strengthening social networks and trust between stakeholders (Sabatier, Leach, et al. 2005; Floress et al. 2011; Morton 2011).
- Integrating scientific and local knowledge (Daniels and Walker 2001; Sabatier, Weible and Ficker 2005; Morton and Brown 2011).
- Coordinating and targeting resources to critical areas to reduce duplication of effort and increase return on investment (i.e., environmental outcomes relative to resources invested) (Morton and McGuire 2011).

In their book *Swimming Upstream: Collaborative Approaches to Watershed Management*, Sabatier, Focht et al. (2005) offer a conceptual framework for understanding collaborative watershed management (Figure 1). The framework identifies 12 factors believed to influence watershed outcomes and their relationship to each other. The watershed leader serves as the coordinator, director, or facilitator of the ‘Institution for collaborative watershed management’ (watershed collaborative), which provides the structure and function for the collaborative **Process**. The watershed collaborative produces **Policy Outputs** (plans and projects) and influences the **Civic Community**, which consists of six factors: human capital, social capital, political efficacy, trust, legitimacy, and collective action beliefs. Changes in the civic community and policy outcomes lead to **Watershed Outcomes**. In this model, the watershed collaborative plays a central role in engaging and building capacity within the civic community to achieve policy outputs and watershed outcomes.

Perhaps because collaborative approaches, by definition, require shared leadership among multiple stakeholders, research has tended to focus on identifying the attributes of successful watershed

groups rather than identifying attributes of successful *individual leaders*. However, a literature review by Leach and Pelkey (2001) identified participation by an effective leader, coordinator, or facilitator as second in importance only to adequate funding as a key factor in the success of collaborative watershed management efforts. Another study of collective action in fisheries found that the presence of one effective leader, defined as an “individual with entrepreneurial skills, highly motivated, respected as a local leader and making a personal commitment to the co-management implementation process,” increased positive outcomes in fishery management (Gutiérrez et al. 2011, 387-8).

Another tendency in this area of research is to focus on watershed *planning* with little attention to influence of specific leadership qualities on the successful *implementation* of watershed plans. As a result, our understanding of effective leadership characteristics for plan implementation is relatively limited. Interestingly, some studies of watershed partnerships (Leach and Pelkey 2001; Mandarano and Paulsen 2011) have found very weak linkages between key social outcomes associated with effective planning (e.g., increased trust, social and human capital, and learning) and environmental outcomes (e.g., stream restoration and protection projects). Mandarano and Paulsen (2011, 1310) call for more research into “the presence and influence of collaborative behaviors that facilitate the development and implementation of site specific projects.

Purpose

The purpose of this study was to identify the leadership characteristics and behaviors of watershed coordinators who successfully implemented NPS projects in Ohio. We were interested in answering the following specific research questions:

- What characteristics of watershed coordinators are most critical to successful watershed plan implementation?
- Which behaviors by watershed coordinators are critical during the process of implementing watershed protection and restoration projects?

¹Putnam (1995, 67) defines social capital as “features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit.”

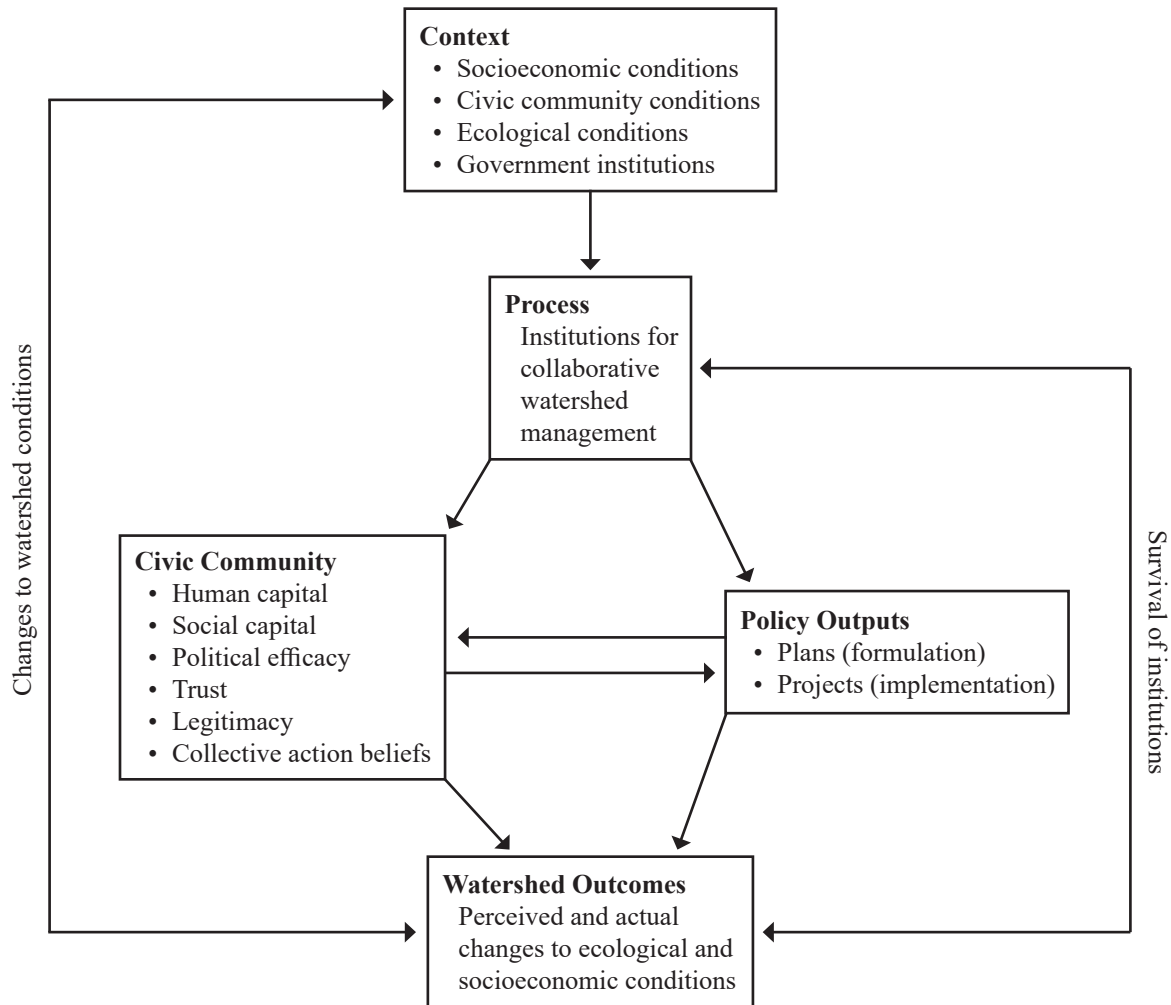


Figure 1. A dynamic framework for watershed management. Reproduced from Sabatier, Focht et al. 2005, 14.

- What role(s) does the watershed coordinator play in the broader context of collaborative watershed management, specifically in implementing NPS management projects?

Methods

As noted earlier, much of the research on watershed leadership has focused on understanding the characteristics and processes of watershed *groups* while little research has been conducted on the characteristics and behaviors of *individual leaders*. In cases where understanding of the phenomenon of interest is still immature, an exploratory, qualitative research design is most appropriate (Creswell 1994). In quantitative

research, the researcher determines which variables will be measured prior to making any observations and then looks for evidence of relationships between the pre-selected variables. In qualitative research, variables of interest are not predetermined but instead emerge from the observations through inductive analysis. That is, the researcher observes the phenomenon and then looks for evidence of relationships based on the observations. Qualitative research can inform quantitative research as variables of interest are identified. Qualitative research design should not be confused with qualitative research methods. A qualitative research design refers not only to the methods used but also to the researchers' overall approach to the study. Data collection methods

commonly associated with qualitative research such as interviews, observations, and document analysis can also be used with quantitative research designs.

Participant Recruitment

The NPS Program Coordinator in the Division of Surface Water at OEPA provided an initial list of five potential interviewees who had successfully completed NPS management projects while implementing an endorsed watershed action plan. The list included watershed coordinators and agency staff who worked directly with them. A chain referral sampling approach (Morgan 2008), also commonly referred to as ‘snowball sampling,’ was used to identify additional possible participants by asking each interviewee to identify a watershed coordinator they considered to be successful at implementing NPS management projects from watershed action plans. The chain referral or snowball sampling approach is most useful when you do not have a clearly defined group or list from which to select your participants. For this study, there was no existing list of ‘effective watershed coordinators’ so we consulted with our study participants to identify other successful coordinators. In all, 20 individuals were contacted and all 20 agreed to be interviewed.

Interview Questions

We created an interview guide to ensure consistency in the interviews. Questions were open-ended with some optional follow-up questions. There were 15 total questions covering the following topics:

- Demographics (name, position title, employer).
- Professional history (educational background, relevant work experience, current role).
- Definition of successful watershed plan implementation. (The purpose of this line of questioning was to understand how interviewees defined successful implementation rather than imposing a definition or set of criteria for defining success.)
- Description of a successful watershed plan implementation project. (Here, we asked

participants to recall a specific NPS project that they led and provide as much detail as possible about how the project unfolded and what factors influenced the success of the project.)

- Interviewee’s role in a successful watershed implementation project.
- Description of other collaborators’ roles.
- Critical skill areas for successful watershed plan implementation.
- Other comments.

Data Analysis

The interviews, which ranged in duration from approximately 45 minutes to 90 minutes, were audio recorded and transcribed. Text from the transcripts was coded in the NVivo 10 software program. The authors used the three-step process of coding, categorizing, and theme searching recommended by Glesne (1999). Initially, several interview transcripts were coded separately by two researchers to identify characteristics, behaviors, and roles of effective leaders. These initial codes were compared and reconciled to create an organizing structure for coding the remaining interviews. All remaining transcripts were coded by a single researcher. Once the coding was completed, all three researchers worked collaboratively to identify categories, themes, and relationships among themes.

Results

This section includes a brief overview of the demographics of the interviewees (Table 1) and results from the analysis of the interview data. The results include a framework of knowledge/skills associated with effective watershed leadership followed by a more in-depth description of the various factors identified in the framework and how they relate to each other.

Five of the participants provided technical and program support to multiple watershed projects and leaders (four of the five were state or federal agency employees and one was a university employee). The remaining 15 participants played a leadership role with a single watershed group or initiative. Participants represented a diversity of geographic regions in Ohio (NE, NW, SE, and SW),

Table 1. Participant demographics.

	Number of Participants
Position Title	
Watershed Coordinator	7
Program/Project Manager	4
Executive Director	4
Board Member	2
Other*	3
Education Level	
PhD	1
Master's	12
Bachelor's	7
Degree Major/Area of Study	
Environmental sciences/studies	6
Natural resources management	6
Natural sciences	4
Agriculture	1
Regional planning	1
Other	2
Employer	
Local/county agency (including soil and water conservation districts)	7
Nonprofit organization	3
State/federal agency	4
Watershed organization	3
University	3

basins (Lake Erie and Ohio River), and landscapes (agricultural, urban, and mixed). Although they had different titles (e.g., watershed coordinator, executive director, program manager), throughout this document we use the term 'watershed coordinator' to refer to individuals with primary responsibility for leading collaborative watershed planning and implementation.

Framework of Effective Watershed Leadership

After coding and analyzing the interview data to identify themes, we developed the following framework for watershed leadership. The

framework consists of three categories and nine subcategories of attributes (Table 2).

Social Attributes. By far, the attributes most frequently mentioned by study participants as critical to implementation of NPS projects involved communication, education, and interpersonal and group dynamics. The participants suggested that building and maintaining trusting relationships was a vital role of the watershed leader not only during planning but also to achieve implementation of priority projects. Building and nurturing trusting relationships requires effective communication with multiple stakeholders in order to build effective teams, muster political and financial support, communicate the value of proposed projects to funders and potential partners, and hold collaborators accountable for their commitments. The following quotations from interviews are examples of statements coded to Social Attributes:

"[The watershed coordinator] has to be someone who feels totally comfortable reaching out, not waiting for people to call her or him, but making phone calls, sending out emails, and more importantly, going out into the community, shaking peoples' hands, looking people in the eye, so really strong people-engaging skills."

"No matter what your background is, you still have to be able to communicate to people and build relationships to do nonpoint source projects because, like I said before, it's all voluntary."

"I'm a facilitator. I bring the right people to the table. It's incumbent upon me to know who those people are, to gauge people's skill sets. I assemble the right team to make each project happen."

"I think what is most helpful is interpersonal skills and being able to communicate either scientific information or land information in a way that resonates with our members – not only our fellow agencies and organizations, but also to residents, townships and trustees, and community councils."

"Ultimately, getting something implemented depends on successfully

Table 2. Attributes of effective watershed leaders.

Attribute Categories	Attribute Subcategories
Social	Communication and education
	Interpersonal and group dynamics
	Community dynamics
	Political dynamics
Technical	Tools and techniques
	Specialized knowledge base
	Systems thinking/problem-solving/analytical skills
Administrative	Project management
	Grant-writing and management

navigating the power structures of local communities, [which] can be very weird. It's important, and I think it's a skill that is gained by experience."

Technical Attributes. NPS project implementation often requires a high level of technical expertise, but rather than taking on the technical aspects themselves, watershed coordinators talked about assembling teams of experts that had the appropriate knowledge and skills. For example, two interviewees said:

"Well, I'd say what I have is that I'm a leader. I'm a facilitator. I bring the right people to the table. It's incumbent upon me to know who those people are, to gauge people's skill sets. I assemble the right team to make each project happen."

"A watershed coordinator/leader does not need to be a technical expert. He or she needs access to the technical experts within the community."

Nevertheless, several interviewees pointed to the value of having a certain level of technical knowledge and expertise in order to prioritize projects, communicate with project teams, and understand and communicate information about the projects to key stakeholders, as in these examples:

"I have a technical background in this general area of water, water resources and ecology, which allows me to be able to speak

the language, understand the language and even more importantly, be able to interpret the technical aspects into non-technical language for the decision-makers who are typically not biologists and not watershed specialists."

"I think having any kind of science background is helpful so that you can analytically look at things and understand what the problems are from a natural resource standpoint."

Technical knowledge and expertise allowed the watershed coordinator to participate effectively in conversations with technical experts about project details, to convene and work with a team of experts, and to serve as an intermediary between the experts and key stakeholders who may not have had the same expertise but were critical to getting the project completed.

Administrative Attributes. Watershed coordinators in Ohio are often the only full-time staff dedicated to overseeing implementation of watershed plans. As a result, they are frequently required to handle a wide range of administrative tasks including grant writing, grant administration, and project management. These types of administrative and management skills are rarely mentioned in the collaborative watershed leadership literature but in interviews with study participants, project management and the ability to acquire and

administer grants to fund NPS projects were common themes. For example, one interviewee said:

“Grant-writing is pretty important. The funding for these types of projects isn’t given to you. You have to seek and find it. Having the ability to write grants and to find funding to do your implementation is very critical.”

NPS projects can be costly, often running into tens or hundreds of thousands of dollars for assessments, permitting, design, construction, and post-project monitoring. Very few watershed initiatives can undertake such projects without external funding and the task of seeking out and acquiring funding through competitive grants frequently falls on the shoulders of the watershed coordinator. NPS projects may require the watershed coordinator to build partnerships with multiple stakeholders, including landowners, potential funders, cost-share and in-kind service providers, and citizen activists in order to put together a viable grant proposal. Once a project is funded, the watershed coordinator often acts as the primary grant administrator and project manager which typically entails ensuring that contractors produce deliverables on time and on budget, communicating with and reporting to funders and stakeholders, and assuring that cost-share and in-kind service providers fulfill commitments.

Discussion

The model of the effective watershed leader that emerges from the literature review and our Ohio interview data is an individual with a relatively high level of technical knowledge who is particularly skilled at building, maintaining, and utilizing social capital through effective communication. In other words, the successful watershed coordinator must build relationships with individuals and organizations that are influential in the community and can provide access to resources.

It may be helpful to look at the role of the watershed leader in the context of Sabatier, Focht et al.’s (2005) previously discussed conceptual framework. The watershed coordinators in this study all acted as the formal leader for their respective watershed collaborative. Based on the interview data, watershed coordinators who were

successful at getting NPS projects completed were highly effective at utilizing and mobilizing the civic community. They were able to identify and assemble ad hoc teams of experts (human capital) to identify and design potential projects. They increased trust and strengthened networks by working and communicating with diverse stakeholder groups. Successful watershed coordinators learned who had power and influence over key stakeholders and resources, and they built relationships with those individuals and organizations in order to garner support for or avoid opposition to NPS projects (political efficacy).

Researchers in the field of social capital distinguish between bonding and bridging social capital. Bonding social capital is created when individuals form relationships with others who are like them in some important way (e.g., employees of the same organization) and bridging social capital is created when individuals form relationships with others who are unlike them in some important way (Putnam 2007). This study found that effective watershed leaders increase bridging social capital in their watersheds by building partnerships between stakeholder groups that may have very different and even conflicting missions and by facilitating communication between subject matter experts on one hand and lay decision-makers on the other.

Attributes of Effective Watershed Coordinators

Attributes identified under the ‘social’ category were considered to be the most critical for getting NPS projects completed, though technical and administrative attributes were also considered essential. Watershed coordinators must utilize existing social networks, build new networks through partnerships with other organizations, and assemble ad hoc teams of experts tailored to the requirements of each project. Effective watershed coordinators pay attention to local politics and work with or around influential opinion leaders and decision-makers. They are skilled communicators capable of connecting with diverse stakeholders, conveying sometimes complex technical information, and identifying shared interests.

Technical knowledge and skills (e.g., systems thinking, problem-solving) were sometimes mentioned as being directly applicable to NPS

project planning and implementation, but participants also frequently mentioned the value of technical knowledge for communicating with experts who are more directly involved in project planning and implementation. Being able to ‘talk the talk’ gave the coordinators a certain level of legitimacy with technical experts so that they could influence how NPS projects were prioritized and executed. Watershed coordinators also used their communication and education skills to translate complex technical information about NPS projects for lay audiences, including key decision-makers and stakeholders, to acquire needed permissions or resources.

Many NPS projects require external funding and effective watershed coordinators are skilled at preparing grant applications. Once an NPS project is underway, watershed coordinators often play the role of project manager, fulfilling grant reporting requirements and ensuring that contractors and partner organizations meet deadlines and specifications. These administrative responsibilities are rarely mentioned in the watershed leadership literature but participants in this study identified grant writing and project management as essential skills. Administrative knowledge and skills may be overlooked in part because of the strong bias toward project planning rather than project implementation among scholars of collaborative watershed management.

Conclusions

The watershed coordinators interviewed for this study perceived that they had a significant role to play as catalysts for change in collaborative watershed management. They were skilled communicators and educators, they understood and worked effectively with the local social as well as ecological systems, and they utilized and integrated a diverse range of technical, social, and administrative knowledge and skills to implement NPS projects. The skills and strategies required for collaborative watershed planning (building social capital, facilitating communication and shared decision-making, promoting a shared vision) appear to transfer to the implementation phase but must be adapted and focused to meet the particular context of a given NPS project.

Application of Findings

The findings from this study have applications for collaborative watershed institutions, funding agencies, and organizations that provide professional development and support to watershed coordinators. The framework for watershed leadership that emerged could serve as a starting point for collaborative watershed institutions to develop criteria for hiring and evaluating watershed coordinators. Funding agencies may also consider using this framework to evaluate the capacity of watershed coordinators and watershed institutions to effectively implement NPS projects *before* providing funding for those projects.

Organizations that provide professional development opportunities can also apply the findings from this study to their programs. Authors of this report direct the Ohio Watershed Academy, a professional development program for watershed leaders, and we made significant revisions to the curriculum for that program as a result of the study findings. In particular, new modules on water policy and government agency roles were added to the curriculum to address gaps in the discussion of political dynamics. In addition, assignments were revised to emphasize systems thinking and analytical skills. The overall structure of the course was also reorganized to provide more balance among the three categories of watershed leader attributes (technical, administrative, and social) that emerged from the study.

Implications for Further Research

While this study does provide some insight into the knowledge and skills required by watershed coordinators to implement NPS projects, it raises more questions than it answers. Some possible questions for future research include:

- How does the role of the watershed coordinator compare to other watershed leaders (e.g., members of advisory boards and boards of directors)?
- How does the role of the watershed coordinator change when transitioning from planning to implementation?
- Does the role of watershed coordinator vary in different political or geographical

contexts? For example, do watershed coordinators require different skill sets in western watersheds where there tend to be more entrenched conflicts between resource users (e.g., logging and ranching versus salmon fisheries and wildlife)?

- What is the relationship between the capacity of a watershed coordinator and collaborative watershed management outcomes? What other social and environmental contextual factors (e.g., relative levels of social capital, level of environmental degradation, socio-economic conditions) influence watershed coordinator effectiveness?

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Author Bio and Contact Information

JOSEPH E. BONNELL is currently working as a private consultant. He has more than twenty years of experience in water resources management as an educator and researcher. He recently completed a teaching and research Fulbright scholarship in the Dominican Republic where he conducted research on watershed governance in the Dominican Republic. His research and teaching have focused on the development and implementation of effective policies and programs to promote agricultural best management practices.

DALLAS ZACH HETTINGER is currently working as a Project Engineer in the Specialty Chemical Industry. He has more than 5 years of experience in the construction and manufacturing industries as a project manager. His time spent at The Ohio State University, School of Environment & Natural Resources focused on core competencies of project management and organizational leadership. He has a Masters of Environment & Natural Resources from The Ohio State University.

ANNE BAIRD (corresponding author) is a Program Director in the School of Environment and Natural Resources at The Ohio State University. She leads the Ohio Certified Volunteer Naturalist and Ohio Watershed Academy Extension Education programs. Her research interests include core competencies of water managers and environmental volunteers and experiences and mental models of streamside landowners. She has a Ph.D. in Extension Education from The Ohio State University. She may be contacted at baird.41@osu.edu or via mail at 210 Kottman Hall, 2021 Coffey Road, Columbus, Ohio 43210.

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